# Oil Spills in New Zealand's Territorial Sea

## A Fence at the Top of the Cliff?

by

Veronica Anne Hoeberechts

Being a Thesis submitted to the University of Waikato
in fulfilment of the requirements for the
Degree of Master of Social Sciences

THE UNIVERSITY OF
WAIKATO
*Te Whare Wānanga o Waikato*

2006

# ABSTRACT

Over the last four decades, there have been many catastrophic oil spills in the marine environment and these larger oil spills have often caused environmental devastation especially if they occurred in the coastal marine area. Serious ecological damage can also be caused from operational discharges, ballast and bilge water, from ships within territorial waters. Until now New Zealand has only had relatively minor oil spillages in its coastal waters, primarily from ships' discharge or accidental leaks in port. The possibility however of a major oil spill occurring within our coastal area is considerably higher today than 20 years ago as there has been a significant increase of all types of oil tankers/bulk carriers/container ships to New Zealand.

New Zealand is an island nation that relies heavily on the marine environment for commercial operations such as fisheries and tourism and many New Zealanders enjoy recreational, aesthetic and spiritual ties to the coastal marine area. The sustainability of our territorial sea is therefore of paramount importance. A major oil spill could cause widespread ecological damage, cripple or destroy marine/tourism operations and ensure that the human values associated with the coast are lost, possibly for many years. The research reported here addresses the issue of oil spill preparedness and response in New Zealand's waters. A combination of a review of New Zealand's international commitments and domestic legislation and two case studies of high profile oil spills: the Poor Knights Islands Marine Reserve and the Jody F Millennium are used. The research identifies whether the present environmental legislation, that promotes sustainable management, is proactive in the prevention of a major oil spill and concludes that the New Zealand approach reflects a relatively strong Sustainable Imperative position rather than one of Sustainable Development. In implementation it relies heavily on co-management integrated at the regional council level.

# Acknowledgements

To my two supervisors, Hamish Rennie and Anne-Marie d'Hauteserre I thank you for your supervision, encouragement and knowledge and the time, even on the weekends, that you have given me to have this thesis finished.

To the staff of the Geography Department, I am grateful that you put up with me for so long and a special thanks to Max Oulton for his cartographic skills and Brenda for always having a smile on her face to cheer me up.

To the people who allowed me to interview them and others who kept answering my emails and phone calls with the queries I had, I wish to thank you. The experiences, opinions and information you all shared with me were of great value to this research and for this I am indebted to Ian Niblock, Hans Wetendorf, Hori Parata, John Lee-Richards, Ken Murray, Mike Price and the MNZ staff of Te Atatu.

To the friends I have meet and kept along the way, thank you for the support that you have shown me throughout this 'thesis' process, the enthusiasm and so often the laughs, Toni with an extra special thank you to Kat for your unbelievable generosity of spirit and to Sarah for if it hadn't been for your insight a major stumbling block would not have been overcome. Two others have also got my undying thanks and they are Bethea Weir and Margaret Dobson, for again without your wonderful support over the last six months I would never have got to this point.

To my family and my 'old' friends, whom I often did not see very much, thank you for your support even if from afar I knew your thoughts were with me and Georges, your kindness still blows me away, thank you.

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# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| Australian Maritime Safety Authority | AMSA |
| Coastal Marine Area | CMA |
| Contract regarding an Interim Supplement to Tanker Liability for Oil Pollution (1968) | CRISTAL |
| Department of Conservation | DOC |
| Exclusive Economic Zone | EEZ |
| International Convention for the Prevention of Pollution from Ships (1973) and subsequent Protocol (1978) | MARPOL 73/78 |
| International Convention for the Prevention of Pollution of the Sea by Oil (1954) | OILPOL |
| International Convention on Civil Liability for Oil Pollution Damage (as amended) (1969) | CLC |
| International Convention on Oil Pollution Preparedness, Response and Cooperation (1990) | OPRC |
| International Maritime Organisation | IMO |
| International Union for Conservation of Nature and Natural Resources | IUCN |
| Mandatory area to be Avoided | MATBA |
| Marine Reserves Act 1971 | MRA |
| Maritime Safety Authority (as of July 2005 – Maritime New Zealand (MNZ) | MSA |
| Maritime Transport Act 1994 | MTA |
| Multilateral Environmental Agreement | MEA |
| Ministry for the Environment | MFE |
| New Zealand Coastal Policy Statement | NZCPS |
| Northland Regional Council | NRC |
| Parliamentary Commissioner for the Environment | PCE |
| Poor Knights Islands Marine Reserve | PKIMR |
| Regional Coastal Plan | RCP |
| Regional Policy Statement | RPS |
| Resource Management Act 1991 | RMA |
| South Pacific Regional Environmental Program | SPREP |
| Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution (1968) | TOVALOP |
| United Nations | UN |
| United Nations Convention on the Law of the Sea | UNCLOS |
| Voluntary Vessel Routeing Code | VVRC |

# Chapter One: Introduction

> Oil is the life blood of our modern industrial society. It fuels the machines and lubricates the wheels of the world's production. However, when that vital resource is out of control, it can destroy marine life and devastate the environment and economy of an entire region … (Max, 1969 citied in Aynechi, 2004 1).

The above quote could have been written yesterday instead of over 30 years ago, as it is just as relevant today. Oil continues to be the life blood of the modern world and the demand for it is increasing. Consequently, the marine transportation of it has also been amplified and this is demonstrated by the available figures, produced by the International Tanker Owners Pollution Federation (ITOPF) (2004), which show that in the 1990s over 7000 oil tankers transported more than 1.5 billion tonnes of crude oil/oil products. This escalation of oil tanker traffic has ensured that the proclivity for oil spills in the marine environment continues to be a great threat.

According to Doerffer (1992) a major oil spill is one that is 700 tonnes or larger, while a minor oil spill is below seven tonnes, thus a medium oil spill is anything in between. Most minor marine oil spills, as they occur fairly frequently, are not reported beyond the country they occur in. This also appears to be the case for many medium-sized oil spills and may be due to a variety of factors such as; the amount spilt, whether the spill is in a significant/sensitive ecological habitat or that the oil spill was quickly contained and/or cleaned up. Hence, it is often only the major oil spills (>700 tonnes) that receive international media attention.

The first such major oil spill from an oil tanker, to be given worldwide coverage, occurred in March 1967 with the grounding of the 'Torrey Canyon' on Pollard's Rock in the Seven Stones reef between the Scilly Isles and Land's End, England. The tanker leaked approximately 119,000 tonnes of crude oil into the marine environment, devastating the coastal marine area (Draffen, 2004; Petrow, 1968; Smithsonian Institute, 2004).

Sadly the 'Torrey Canyon' was not the largest oil spill to have eventuated. Records differ regarding both the number and size of the major oil spills that have happened since. For example, according to The Mariner Group (2006) only seven major spills occurred in the 1970s while the ITOPF (2004) recorded 252 oil spills greater than 700 tonnes during that period. The ITOPF also state that the number of major oil spills has dramatically lessened throughout the 1990s and into the 21st century. There are various reasons for this reduction that ranges from enhanced navigational technology to double hulled tankers. The essential component that aided the decrease of major oil spills nevertheless, was the nearly universal acceptance of 'sustainability' of the oceans. This has ensured that many maritime nations, including New Zealand, have ratified international, regional and/or bilateral agreements and implemented domestic laws regarding the transportation of all oil products (Doerffer, 1992; ITOPF, 2004).

Despite the fact that larger oil spills have lessened in recent years, they still happen. An example is the 10,000 tonnes of oil that smothered 400 kilometres of Brittany coastline in December 2000 or the 77,000 tonnes of oil that was leaking from an oil tanker that sank off the North western coast of Spain in November 2002 (Doak, 2002; The Mariner Group, 2006). Both of which if they had occurred in New Zealand's territorial waters would probably have had extremely detrimental environmental and economic repercussions for the coastal communities affected.

Apart from the scale of damage that can occur from thousands of tonnes of oil if it is spilt in coastal waters, smaller spills (minor to medium) can also be biologically devastating. Further to this serious ecological damage can also be caused from operational discharges from ships within territorial waters. Up to now New Zealand has not been the recipient of a major oil spill, with most of the oil pollution in our coastal waters being from ship's discharge and/or accidental spills in port/harbours. Though, with the sinking of the cruise liner the Mikhail Lermontov in 1986 and the grounding of the Jody F Millennium in 2002, New Zealand had to deal with the possibility and reality, respectively, of medium sized oil spills. Notwithstanding these 'accidents' the main reason New Zealand has not had to cope with a major spill is that we are not on any significant oil tanker routes. Despite this the possibility of an oil spill occurring within our coastal area

is considerably higher today than 20 years ago as there has been a substantial increase of tankers, bulk carrier/container ships and other large vessels to New Zealand (Doerffer, 1992; Iversen, 1996).

## 1.1 Research Motivation

My personal interest for this thesis topic originated after a small oil spill occurred between the Poor Knights Islands Marine Reserves and the Northland coast, two days prior to a diving trip that I was to take at the reserve. Initially, the relevant authorities forecast that the spill could take about two weeks to clean up and the environmental damage that might occur could destroy the dive site for many years to come.

The oil spill was cleaned-up a lot sooner than the estimated two weeks and though it has been just over five years since the incident, it appears that little long-term ecological damage has occurred. Nevertheless, all the tour and dive operators still lost at least a week's business at the height of the season and signs of the oil spill are still visible in the caves and archways of the islands. As a diver I was annoyed that my attempt to dive at the Poor Knights had been prevented, but as an environmentalist I was very angry that the reserve could have been destroyed for the foreseeable future.

I recognize that my feelings of annoyance and anger might have had the potential to create a bias in my research. However, I will state now that both emotions were neutralized by the favourable outcome, of the oil spill, and with the passage of time. Secondly, as I explain in the Methodology Chapter I reflect upon my worldview and undertake to guard against any bias.

## 1.2 Introducing the Research Question & Objectives

Sustainability is a concept that has emerged from the environmental sciences and global development agencies and stems from the theory of Sustainable Development which is detailed in Chapter Two. Nevertheless, a brief explanation of Sustainable Development is warranted here and is provided for by the World Commission on Environment and Development (WCED) (1987 43) as

"development that meets the needs of the present without compromising the ability of future generations".

This outline of Sustainable Development is non-specific and therefore can be interpreted in different ways. The same could be said for sustainability, albeit possibly not to the same degree. An example of this is the two subsequent definitions. Both originated from the same source and although they are similar, the first suggests a much broader remit than the second. The first is "sustainability may be defined as having four elements: to conserve the stock of natural assets; to avoid damaging the regenerative capacity of ECO-SYSTEMS (emphasis in the original); to achieve greater social and economic equality; and to avoid imposing risks and costs on future generations" (Bullock *et al.* 2000 849). The second description of sustainability is that it "… refers to management practices that are designed to ensure that the exploitation of resources is conducted in a manner that protects the resource base for use by future generations" (Bullock *et al.* 2000 849). Thus, to put more succinctly, sustainability entails resource and/or environmental preservation and inter-generational equity. As such it denotes a far more eco-centric perspective than Sustainable Development, which implies development as the primary objective.

Another variation of Sustainable Development is sustainable management. To a greater extent sustainable management is aligned to the concept of sustainability and is the fundamental tenet of the Resource Management Act 19991 (RMA), New Zealand's principal environmental legislation. The RMA governs natural and physical resources, and as such has a definitive role in protecting the oceanic environs of New Zealand (Memon *et al.* 1995; Parliamentary Commissioner for the Environment (PCE), 1999).

The citizenry of New Zealand rely heavily on the marine environment for commercial operations such as fisheries and tourism; also many enjoy recreational, aesthetic and spiritual ties to the coastal marine area (CMA). Accordingly the sustainability of the CMA could be considered vital to the economic and socio-cultural well-being of New Zealanders. A major oil spill which could cause widespread ecological damage, cripple or destroy marine and tourism operations and ensure that the human values associated with the coast are

lost, possibly for many years is unthinkable. For this reason, a proactive stance towards the prevention of a major oil spill would appear advisable. Consequently it will be the legislation that regulates New Zealand's marine environment and what preventative measures to marine oil spills that feature in our laws that will be the main subject of this research.

### 1.2.1 Research Question and Objectives

The research question is:

How does New Zealand's legislation prevent oil spills in its territorial waters?

To realize the research question two main objectives need to be answered. They are;

Objective One: to explore whether the cause of New Zealand's marine oil spills are due to the oil tanker/shipping companies business operation and/or ideology.

Objective Two: to establish what governmental measures are in place to lessen the impact of an oil spill in New Zealand.

To accomplish the objectives and answer the research question, three central issues will be investigated. Firstly, New Zealand's proactive and reactive strategies to oil spills in response to international and national environmental and shipping legislation, agreements and/or protocols will be considered. Included in this analysis of domestic law will be whether the precepts of the Precautionary Principle is recognized and upheld. The reason for this is that many international treaties that New Zealand is signatory or party to incorporate these precepts. Secondly the current laws, policies and regulations regarding the risk of a major oil spill in New Zealand's coastal marine environment will be examined. Thirdly, to verify the extent to which reality reflects legislative intent, two cases of oil spill incidents in New Zealand waters will be analysed and the findings presented.

## 1.3 Thesis Structure

Chapter Two discusses the theoretical perspectives relevant to this research. Three main concepts will be examined; first Weak versus Strong Sustainability, two macroeconomic versions of Sustainable Development, then the Sustainability Imperative, followed by the Precautionary Principle. Two other processes, 'ecological footprint' and 'integrated coastal management' will be outlined with respect to the significance that these processes and theories have in both New Zealand's international and national environmental legislation and with consideration to oil spills.

Chapter Three describes the methodology and methods that were used in this research. The research design is defined and includes the author's approach to the research and other possible limitations are explained. The qualitative research methods of case studies, interviews and discourse analysis will also be discussed.

Chapter Four introduces and reviews New Zealand's statutory environmental framework that governs the coastline and territorial sea. This consists of the identification of the international and regional treaties, protocols and agreements, which pertain to the marine environment, that New Zealand is a party or a signatory to and analyses our national maritime statutes and policies as to whether they are proactive or reactive.

Chapter Five presents the case studies. This chapter considers two cases, the first and major case study of this thesis happened in December 1999 off the Northland coast. Although it was a small oil spill, it caused major concern as it occurred within the boundaries of a sensitive marine eco-system and could have caused extensive environmental damage. The other case study presented is a desktop review of an oil spill off the Gisborne coast in February 2002 (Figure One).

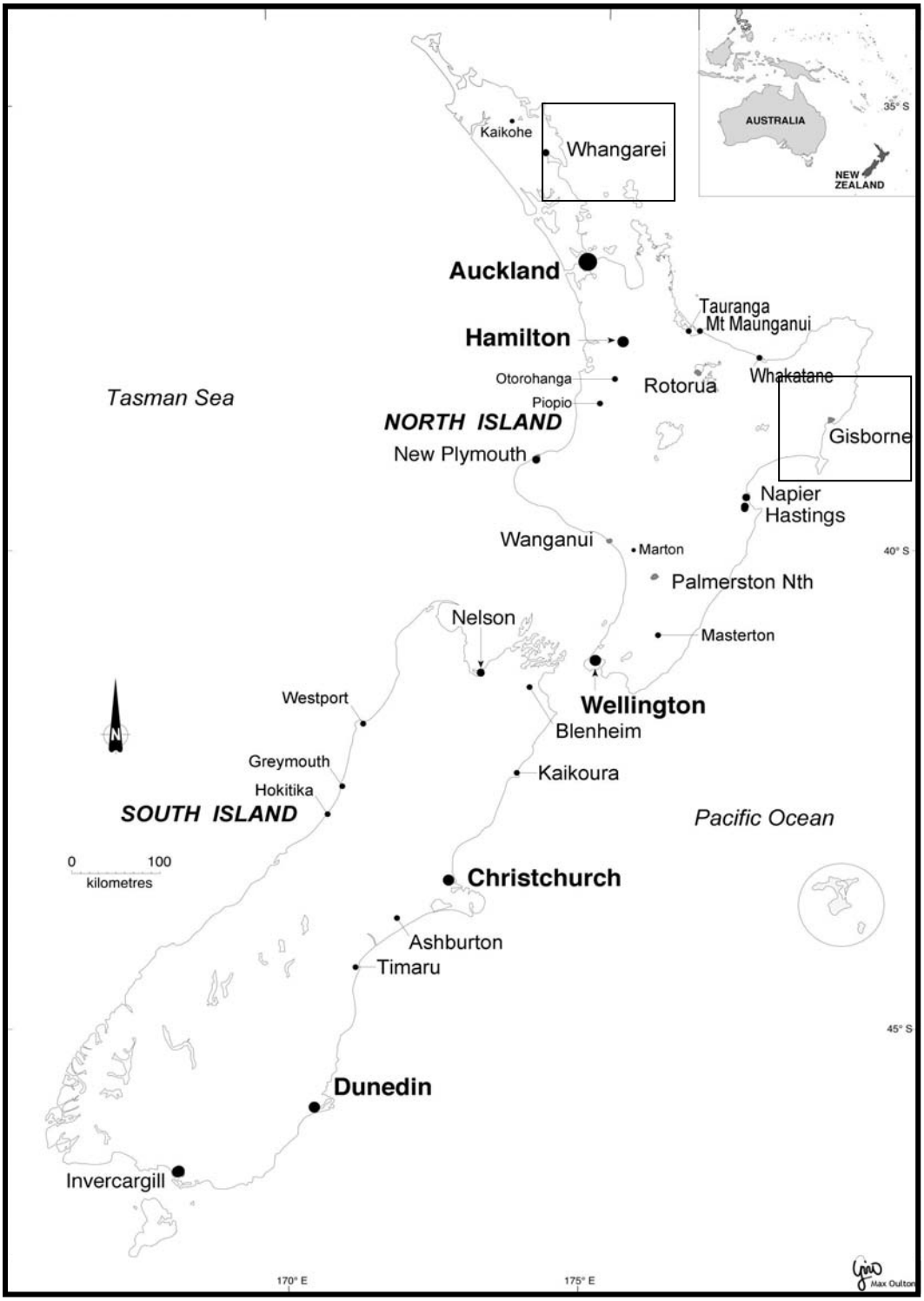


Figure One: Location of case study areas (Oulton, 2006).

In Chapter Six the author focuses on the analysis of the major issues that have emerged from the research. The legislative influences and authority that govern the management of the coastal marine area are examined through the information collected from the case studies. In addition, this chapter speaks to the question of integrated coastal management.

In Chapter Seven the conclusions of the research are presented. The two objectives are examined through the review and analysis of the international and national legislation and two case studies and the research question is answered. A brief summing up of the main theories is given and the research limitations are revisited. Finally, suggestions for further research will be proposed.

# Chapter Two: Theoretical Framework

The objective of this chapter is to establish the meaning of Sustainable Development and environmental sustainability as relevant to this research. The basis for evaluating the following theoretical framework is that Sustainable Development and economic progress underpin several, if not all, of the international and regional treaties that regulate the use and protection of New Zealand's maritime domain. Further these treaties may have greatly influenced New Zealand's national oceanic environmental standards. Should this be the case they might have enhanced New Zealand's ability to counteract an oil spill in the CMA, thereby strengthening the sustainability of our marine environment. A review of these theories begins with a description of the evolution of Sustainable Development. Then the dominant economic paradigm of the western world and the two major economic theories of Weak and Strong Sustainability are discussed. Next the Sustainability Imperative will be explored with respect to the perception that environmentalism and economic development are a progression from independence to dependence. Also under this ideology the problem of understanding Sustainable Development in context is recognized as an epistemological shift. Finally, consideration is given to sustainability as a radical and holistic concept under the prerequisite of the Precautionary Principle.

## 2.1 Sustainable Development – The Evolution

Acknowledgment that the earth may be facing significant environmental difficulties came to the attention of the general population with the publishing of *Silent Spring* (Carson, 1962). Carson recognized that birds and other insectivorous animals were ingesting the pesticide dichloro-diphenyl-trichloroethane (DDT), used to control insects. Rather than breaking down or being egested, the pesticide was bioaccumulating in the birds and animals, causing detrimental health effects and/or death. The residue from the DDT had previously been thought to have negligible side effects and the occurrence of bioaccumulation was unrecognised.

The *Population Bomb* by Paul Ehrlich in 1970 sounded another alarm. He drew our attention to the fact that the human population, after centuries of extremely slow growth, had shifted into a period of geometric growth that was, and to some extent still is, considered explosive. The two main messages that Ehrlich wanted to warn the public of was that the earth could not withstand this continual growth of the human population and that such escalation would be very difficult to reverse. In the years since *Silent Spring* and *Population Bomb,* both the accumulation of 'insignificant' environmental side effects and the ever increasing human population have been recognized as serious causes of environmental stress.

Consequently, these two publications, along with the continual escalation of environmental damage, were arguably the catalyst for a myriad of environmental, economic and social research. Through this research several new development ideologies emerged, of which the most well known is Sustainable Development, which either just included the protection of the environment as one of the many issues to be considered focused on ecosystem preservation. Thus, Sustainable Development diverged, sometimes dramatically, from the dominant development template of capitalism and industrialism utilized by many, if not all, 'first world' nations in the twentieth century (Esteva, 1992; Watts, 1993).

Although Sustainable Development, as a theory, grew during the 1960s and 70s it did not come to the world's attention until 1987 with the Brundtland Report by the World Commission on Environment and Development (WCED) to the United Nations (Dryzek, 1997). This report promoted the concept of Sustainable Development and advanced understanding of the need for societies to protect the environment and natural resources. The overall vision of the report and the most widely quoted definition of Sustainable Development, is Brundtland's own, "Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987 8). Hence, the notion of nature in-relation to humans and the environmental debt that will be owed to future generations are the foundations of Sustainable Development theory (Bullock *et al.* 2000).

Two opposing economic representations of Sustainable Development are Weak and Strong Sustainability. The proponents of Weak Sustainability adopt the position that humans can use/abuse every resource because technology will provide for future generations (Pearce, 1993). In contrast advocates of Strong Sustainability submit that natural capital must be preserved for future generations (Costanza *et al*. 2001). Both these models and other ideology regarding the concept of resource/environmental use/conservation will be investigated to discover where New Zealand's environmental legislation is theoretically centred and whether the direction secures the sustainability of New Zealand's marine environment. Firstly, the economic blueprint of capitalism practiced by mature industrialised nations will be explored.

## 2.2 Economics and Sustainability

### 2.2.1 Capitalism

Capitalist ideals measure development and progress mainly in economic terms such as productivity and profitability and often with little regard to either the damage inflicted on the environment, sustainability or the people who will follow (Brune *et al.* 1997). One of the main assumptions of capitalism is that continuing economic growth is possible. Further, resource depletion, pollution and other environmental impacts of economic activity are treated as externalities (Bottomore *et al.* 1985; Hutton *et al.* 2000).

Capitalism or the free enterprise system is distinguished by three properties;

- Its continuous effort to expand wealth is exercised by both private enterprise and individuals …; and
- Capitalism is coordinated by a network of markets … [and these] markets are the source of unprecedented adaptability; and
- Capitalism is uniquely characterised by a dual system of power. Rather than answering to a single political authority, capitalism has a private sector dominated by the decisions of business enterprise. The judgements of consumers, a public sector and

> government which exercises its traditional powers are a limited but important regulatory influence over the private sector (Bullock *et al.* 2000 103).

Certain characteristics of capitalism seem to apply to the economic principles of many governments, including New Zealand, and many businesses such as the oil transportation sector. Although the marketplace and consumerism of many countries drive the production and transportation of oil and oil products, it is often the inadequate or negligent business practices or behaviour of the oil industry that appear to be responsible for most of the major oil spills in the marine environment. A variety of reasons could account for these inadequacies however, but for a notable number of companies it is probable that the profit margin often dominates over other business requirements (Ross, 1973). Inside the oil industry, though more specifically the tankers, this capitalist philosophy has led to certain operational shortcomings. Examples of poor commercial procedures are; the continued use of tankers that are well past their prime; low or no maintenance of vessels; and communication difficulties between officers and crew (Doak, 2002; Transport Accident Investigation Commission (TAIC), 2003). Consequently, any one of these failings or a combination of them or other faults most probably cause the majority of oil spills in the marine environment.

Accordingly, my research will explore whether the cause of New Zealand's marine oil spills are due to the oil tanker/shipping companies business practices and/or ideology.

Before summarising the differences between Weak and Strong Sustainability, a definition from an economic viewpoint of Sustainable Development is necessary. Supporters of the economic view of Sustainable Development accept that development can be defined as "sustainable if it does not decrease the capacity to provide non-declining per capita utility for infinity" (Neumayer, 1999 9**)**. Roughly translated this means that future generations are left with no less an amount of 'capital' then the present generation enjoys. Capital in this case is recognised to include; human capital - our knowledge and skills; human-produced capital - the built environment and machinery; and natural capital - all

things that are produced by or exist in nature that is not human-made (Turner *et al.* 1994).

The problem of Sustainable Development however, is that there are many often conflicting definitions. The reasons for this could be that ethics/values/views differ among people, industries, non-government organisations (NGO) and governments on what Sustainable Development means and also how to achieve it. This is the case with the advocates on either side of the Weak or Strong sustainability scale. Both accept the definition, as put forth above, but then they part company. Strong Sustainability, a more eco-friendly economic model, is espoused by many environmentally committed scientists, ecological economists, NGOs and individual environmentalists (Pearce, 1993; Turner *et al.* 1994). While promoters of Weak Sustainability include many organisations that believe in the 'free enterprise' system for economies, such as multi-national corporations, some governments and the World Bank (Harris, 2003).

### 2.2.2 Weak Sustainability

Weak Sustainability is an economic model that is based on the work of two neoclassical economists, John Hartwick a resource economist and Robert Solow, a Nobel Laureate. For this reason, Pearce (1997) renders Weak Sustainability as neoclassical economics. Hartwick *et al.* (1998 394) do not consider the economy of Sustainable Development as Weak Sustainability, rather they regard the "… idea of Sustainable Development as an economy in a steady-state …". In this economic model the management of renewable and non-renewable resources are treated differently. For non-renewable resources the process is similar to the 'green' solution (i.e. use replenishable forms of energy, recycle if applicable (although this has limits) and lessen the demand or increase the efficiency of the non-renewable resource).

However, the formula for renewable resources is a system of equality between the "flows of input, economy and production process and flows of output" (Hartwick *et al.* 1998 395). For this steady-state economy to be sustainable, with the same degree of consumption as experienced by the affluent societies of today, requires a fixed level of human population. Therefore, as the human population is still

increasing and the earth is a finite biosphere to achieve a steady-state economy other factors need to be realised. These could include a decrease of per capita utilisation (though this might disregard intra and inter-generational equity), technological advances and the interchange between the human produced and natural capital to ensure a constant capital rule (Daly *et al.* 2004; Solow, 1993).

To the more eco-centric campaigners of Sustainable Development, this constant capital rule is known as Weak Sustainability or as Neumayer, (1999 24) calls it the "substitutable paradigm". One of the requirements of Sustainable Development is the provision of sustainable capital for future generations and under Weak Sustainability it is argued that it does not matter which form of capital is passed on. Therefore, encapsulated in the substitutable model is that as long as human-produced capital is built up, natural capital can be run down (Costanza *et al.* 2000). Accordingly, if enough investment is made into human produced capital then sustainability is guaranteed, virtually automatically, and if 'sustainability' does not occur then the application of specific taxes, regulations or subsidies will redress the imbalance. Or as Hueting *et al.* (1998 144) state "[w]eak sustainability takes the line that the elements of the environment are substitutional in the short term, so that restoration of lost elements can be postponed, awaiting cheaper solutions provided by future technologies".

Consequently, Weak Sustainability is similar to the Cornucopian view, that growth is limited only when science and technology cannot advance any further. Ergo there is no reason why these advances should stop and as a result, due to these advances the Earth is not finite, as new technologies create new resources. Both these points of view, Weak Sustainability, which values human-made capital, and the Cornucopians' who value human capital, believe that these values are substitutable and/or above the value of nature. This is a very anthropocentric perspective, in that 'nature' only has value when humans value it (Maskell, 1998; Simon, 1999).

### 2.2.3 Strong Sustainability

At the core of Strong Sustainability, Neumayer (1999 1) states:

> … is the belief that natural capital itself should be preserved for future generations in addition to the total aggregate capital stock. This is because natural capital is regarded as non-substitutable both in the production of consumption goods and as a more direct provider of utility.

Even with this core belief, there have emerged two divergent interpretations of Strong Sustainability. One of these interpretations is very similar to Weak Sustainability with the only difference being that natural capital is an additional requirement to total capital. An illustration of how this works is the consumption of a non-renewable resource such as oil, this resource can be used but the profit earned would be reinvested in the development of renewable energy sources.

The alternative interpretation, as Turner *et al.* (1994 56) explain is that some forms of natural capital are not substitutable and therefore are considered to be "critical natural capital". Further to this Daly (1995 cited in Markandya *et al.* 2002 27) states "that natural resources are basically complements to the man-made capital in production and that decreased availability of natural resources can be compensated only to a limited extent by increased man-made capital". Hence, champions of this stronger version of Strong Sustainability believe that any resource stock used in the flow of productivity and utility must be able to have a regenerative capability and this cannot be exceeded. Examples of how this may work could be that for every hectare of pine trees felled for timber there is another hectare planted. Another is that "the rate of erosion of topsoil may not exceed the rate of formation of such soil due to weathering", put forth by Hueting *et al.* (1998 145).

Both these examples could be seen as admirable aspirations. Neither however, takes into account that a pine tree could take anything from 10 to 30 years or more to mature and that it can take up to 10,000 years for topsoil to form in the natural environment. Even though this interpretation also does not imply that nature

should be preserved as it is, it does suggest that natural resource stocks remain intact. Further to this it believes that 'critical natural capital' is non-substitutable. The reasons for this non-substitutability are given by Pearce and Turner (1990 43-58) as follows;

- There is a considerable amount of uncertainty and ignorance about the detrimental consequences of depleting natural capital.
- Natural capital loss is often irreversible.
- Some functions of natural capital provide and maintain basic life-support systems.
- Future generations cannot be compensated for any environmental degradation via increased consumption opportunities.

In summary, the main distinctions between Strong and Weak Sustainability are that Weak Sustainability espouses the opinion that the resources, either natural or human-produced, are substitutable. That any problems human-kind may face, such as depletion of both finite and non-finite stock and pollution will be solved by technological progress. Lastly, that greater availability of produce and the consumption thereof will recompense the future generations for environmental degradation. While there is a divergence of thinking regarding what Strong Sustainability actually is, the weaker version of it can be more readily associated with Weak Sustainability than Strong Sustainability. Although the idea of profit from the use of finite resources, being spent on discovering renewable and non-toxic sources, has some merit. Finally, the stronger interpretation of Strong Sustainability promotes the idea that not all resources are substitutable. Some natural resources or 'critical natural capital', such as the oceans and atmosphere, need preservation for many reasons, but the main one being that their function provides basic life-support for all species on earth. The two other key components are that any natural stock used is replaced before capacity of the stock to regenerate is exceeded and that there should be inter-generational equity.

At the beginning of this chapter the most prominent definition of Sustainable Development was quoted. However, this definition of Sustainable Development is fairly ambiguous and, as previously mentioned, many different descriptions of this theoretical perspective have emerged. At the heart of many explanations of

Sustainable Development is that humans assume nature to be subordinate (to us), but that economic growth that includes environmental protection is the means to long-term sustainability (Attfield, 1999; Becker, 1999). Two of the paradoxes of Sustainable Development, being Weak and Strong Sustainability, both of which originated from an anthropocentric viewpoint, to a greater or lesser extent, have already been explored. Therefore, now a more eco-centric perspective will be examined, being the Sustainability Imperative.

## 2.3 Alternative Sustainability Principles

The Sustainability Imperative has arisen as a critique of both Weak and Strong Sustainability, which are economically driven models of Sustainable Development. In contrast the Sustainability Imperative is an ecological imperative and driven by the need to live within the Earth's biophysical carrying capacity and maintain biodiversity, as a sustainable future is only possible if we reduce our environmental footprint.

### 2.3.1 Why the Imperative?

Bourg (2003 2) asserts that "[w]e have disrupted all the main biogeochemical cycles in the biosphere, for example: the carbon cycle … the nitrogen cycle … and the sulphur cycle …". Further to this there are recent predictions stating that by the end of the 21$^{st}$ century, average temperatures could have risen by more than 10 degrees Celsius in the highest latitudes and that the oceans' capacity to absorb carbon could be altered for thousands of years to come (Bourg, 2003). These predictions, along with many others, inform us that the human race and the way we value short-term wealth could lead to the long-term disturbance of the earth's systems. Therefore, it is imperative that the environmental degradation occurring now be reduced or stopped and that an attempt be made to reverse the damage, especially if intergenerational equity is to be achieved (Giddings *et al.* 2002).

### 2.3.2 Sustainable Development v Sustainable Imperative

This hypothesis of Sustainable Development, as indicated before, is contested due to the differing worldviews and/or ideologies held by both people and organisations. Two mainstream neoclassical macroeconomic models are illustrated in Figure Two and Figure Three. Figure Two "conceptualises the sustainability problem as that of maintaining a constant level of consumption per capita forever" (Common, 1996 citied in Peet, 2003 17). Figure Three is an economic design that portrays the eco-system as a sub-system of the economy.

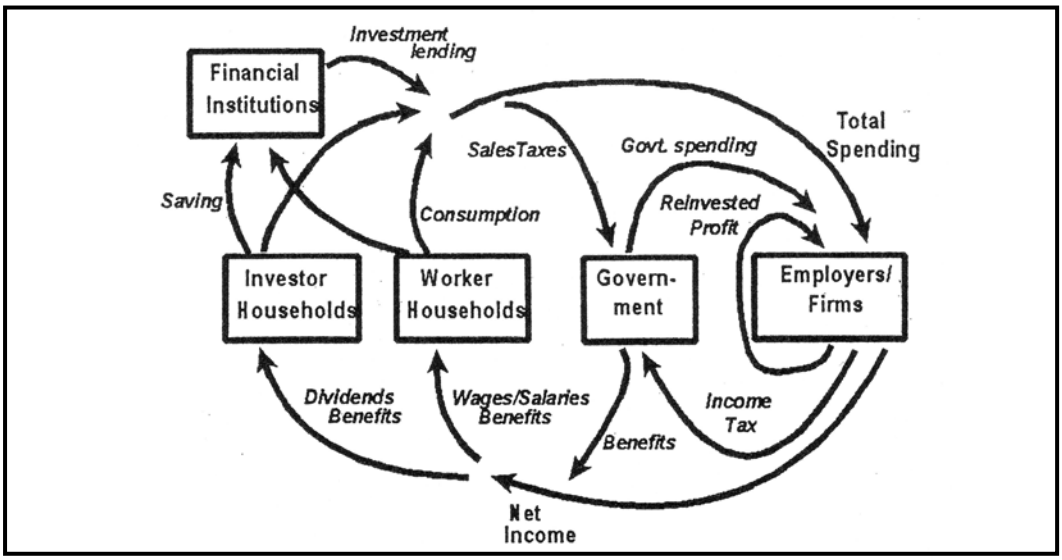


Figure Two: Monetary flow model of macroeconomics (Common, 1996 citied in Peet, 2003 17).

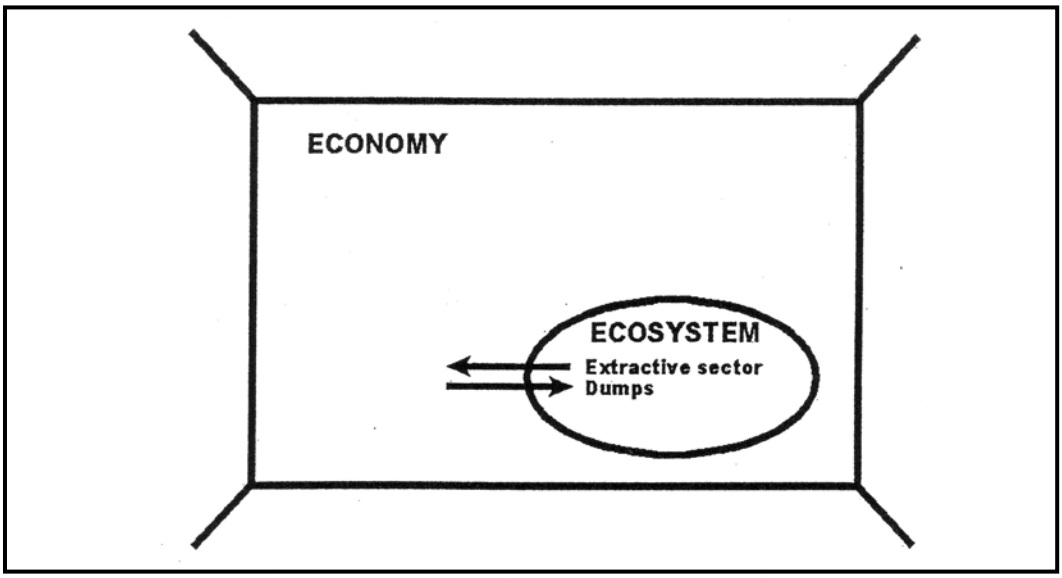


Figure Three: Eco-system as a sub-system of the economy (Daly, 2004 22).

These macroeconomic paradigms show that the prevailing cultural ethic, of some if not most of the industrialised nations, is that nature is seen as separate to humans or as only a supply of resources and a sink for waste. That economic growth and increasing consumption are the main objectives to be aimed for and the degradation and/or 'loss' of ecosystems or the 'gain' of pollution, though regrettable, is necessary to economic expansion. In contrast to the above models of anthropocentric and capitalist ideals are alternatives which aid the reduction of biosphere damage. These paradigms recognise that Earth is a closed system in which all economic and social activity occurs. The theory of Sustainable Development is one and particularly over the last 15 years has seen the integration of the economy, society and the environment (Figure Four).

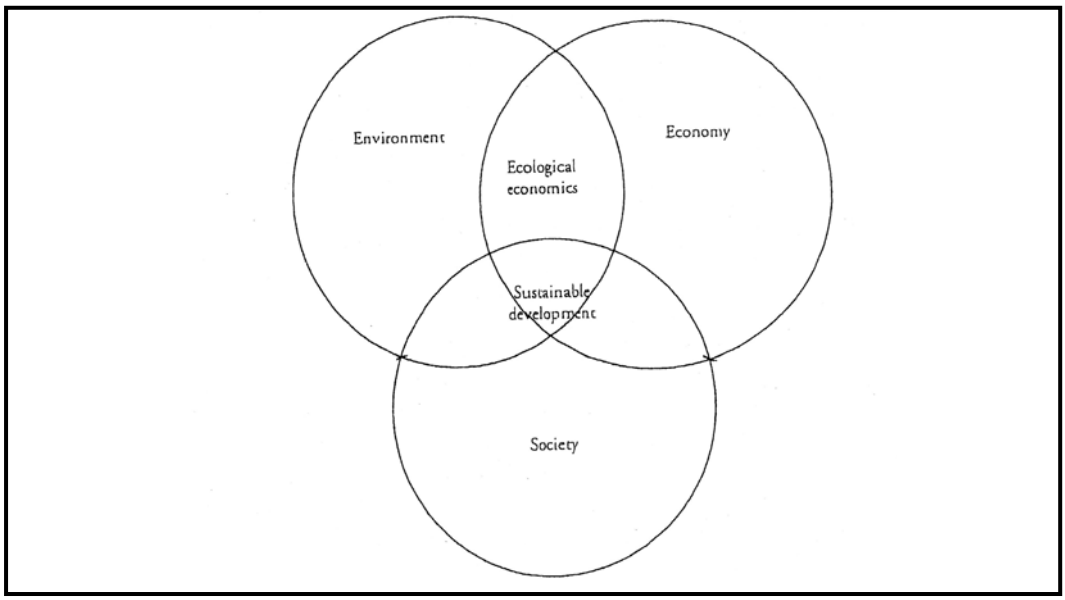


Figure Four: The simple concept of Sustainable Development (Adapted from O'Riordan *et al.* 2001 15).

The above model presents the boundary crossovers between the economy, society and the environment as sustainability, and does consider that all three areas of human existence do overlap and cooperation between all three is necessary (Giddings *et al*, 2002).

The sustainability paradigm however, that illustrates the 'reality of life' is again an uncomplicated concept that depicts that instead of the three areas of human life being autonomous, although linked, they are in fact situated in a hierarchical relationship (Figure Five) (Opio-Ohongo, 2003).

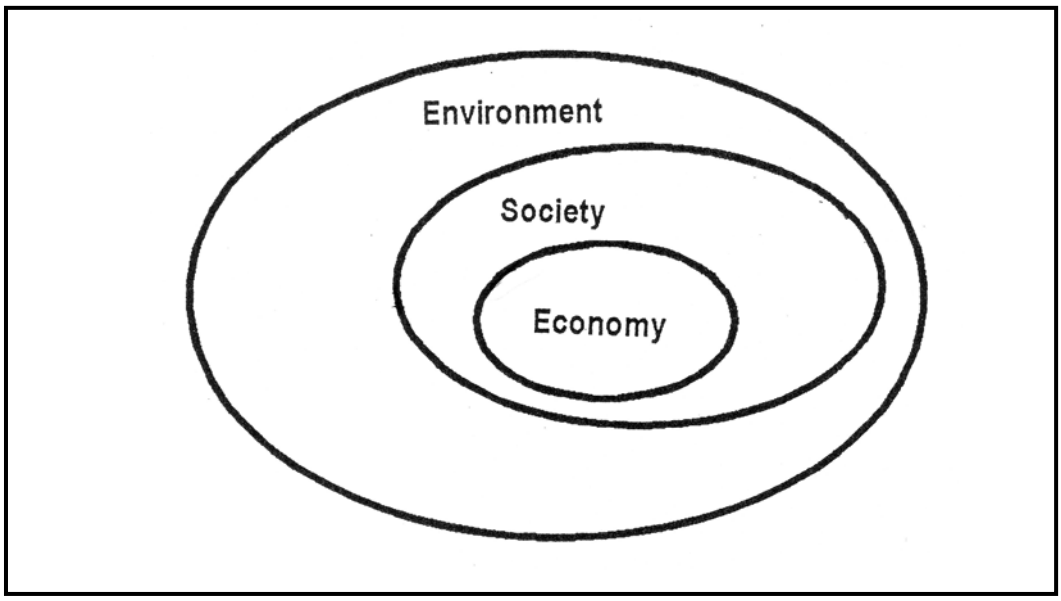


Figure Five: The Sustainability Connection (Adapted from Opio-Ohongo, 2003 6).

This hierarchical relationship shows that economic sustainability is subordinate to societal sustainability and both are subordinate to ecological sustainability. As Peet, (2003 19) stated "Humans are totally dependent upon the natural environment for the necessities of life … In reality we are all inseparably parts of the totality of life on Earth". The fact that this statement is true does not alter the position that human activities have proven to have had a substantial influence on the natural environment, and often without the knowledge of what our activities will cause to the very complex eco-systems that we depend upon (Kassiola, 2003). This last diagram may also be how one might visualize Sustainable Management. This concept differs from Sustainable Development in that economic growth is not on an equal footing with the environment. Under Sustainable Management the environment either 'comes first' or the preservation of the environment is given preference when decisions are made concerning economic goals. Consequently, humans and their economic activities are not separated from nature, but are a part of it and in some cases totally dependent on it (Memon *et al.* 1995).

A critical tool of the Sustainability Imperative is the model of our 'ecological footprint'. Wackernagel *et al*, (1996 5) describe the 'ecological footprint' as "… a measure of the "load" imposed by a given population on nature. It represents the land area necessary to sustain current levels of resource consumption and waste discharge by that population". This model mainly deals with the "load" placed on

land by humans but it can incorporate the coastal marine area as this is both an area of resource consumption and waste assimilation. A city or country's 'ecological footprint' can demonstrate how the citizenry value nature.

At present it appears that New Zealand's 'ecological footprint' is below its carrying capacity, but this has more to do with the land and sea area we claim in comparison to the small population of the country. However, as New Zealand continues to develop, our 'ecological footprint' will increase and as the last two decades have shown our coastal areas have become increasingly populated and subsequently more polluted. The Precautionary Principle has consequently been advanced (e.g. through the New Zealand Coastal Policy Statement) as an approach that should aid avoidance of non-sustainable practices.

### 2.3.3 The Precautionary Principle

The Precautionary Principle is not a new concept. Over the last four centuries or more the Principle has been applied in areas such as public health and medicine. However, the Precautionary Principle as an explicit and coherent concept with regards to environmental hazards did not occur until the early 1970s. Initially the Precautionary Principle was applied to marine pollution in the North Sea and was included in the agreements regarding the North Sea that were ratified at the first International Conference on Protection of the North Sea in 1984 (Harremoes *et al.* 2002). Although the Principle was adopted by the United Nations General Assembly in 1982 it was not until the Rio Summit 10 years later that it gained global recognition. World leaders at the summit embraced the Precautionary Principle as one of the key principles of Sustainable Development and this ensured the widespread international application of it. As a result, the Precautionary Principle is now incorporated into many international laws, treaties and conventions that concern the environment (Harding *et al.* 1993; O'Riordan *et al.* 1994).

As with Sustainable Development, the Precautionary Principle also has varying definitions, but the one recognised through the Rio Summit 1992 is:

> In order to protect the environment, the Precautionary Approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Harremoes *et al.* 2002 6).

Therefore, the Precautionary Principle basically requires that humans protect the natural environment in advance of conclusive scientific evidence that harm will occur from a new or continuing human activity (Box One).

**Box One** **Possible Formula for the Precautionary Principle**

A formula for the principle could be:

Scientific uncertainty + suspected harm = precautionary action

Whereby:
Uncertainty = ignorance, indeterminacy (the unknown of large eco-systems) and statistical model or parameter ambiguities that may be diminished with further information.

Harm = serious (covers large areas or extends over long time periods) irreversible and cumulative

Action = preventative and anticipatory (Harding *et al.* 1993; O'Riordan *et al.* 2001).

There is a basic criticism of the Precautionary Principle which is that it is unnecessary in a society that already has a risk assessment process in place (Harding *et al.* 1993). Nevertheless, risk assessments often have to wait for evidence of harm, whereas the Principle gives weight to lack of evidence. Consequently this 'lack of evidence' actually places the burden of proof of harm on the proponents of an activity, instead of the potential victim of the harm. The Principle therefore calls for zero risk, but as there is always risk the goal of the Principle is to reduce the damage and/or risk in comparison to that which has been incurred in the past (Deville *et al.* 1997). By implementing the Precautionary Principle the affected community can thoroughly examine and consider alternatives to potential detrimental activities.

Just as there are inconsistencies among the definitions of the Precautionary Principle there is also no uniform or global method regarding the implementation of it. Although the Precautionary Principle is a general principle and not a set of

rules it should, in performance terms, have a practical approach. It has been suggested that these functional guidelines are defined (Box Two) (Deville *et al*. 1997).

**Box Two Examples of Functional Guidelines of the Precautionary Principle**

- Establishment of the long-term goals of the activity or project with regards to the environmental, social and economic aspects.
- Analysis of the risk assessment of the activity/project to define the parameters of 'potential harm', including short and long-term cumulative, out reaching and/or indirect harm to other ecological and social systems.
- Assessment of alternatives and application of the risks/harm they may cause.
- Analysis of both the source and extent of uncertainty and evaluation of all the evidence. This should include; all known scientific data and the possible gaps in the research; consultation with people/groups directly involved in the issues; and determination of the best technologies and industry developments available.
- Adoption of appropriate precautionary/protection provisions that could range from; conditional approvals such as monitoring/feedback and timescales and/ or insurance/liability bonds and/or rehabilitation fees to a moratorium or complete ban (Deville *et al.* 1997).

If these are applied it is clear that the Precautionary Principle is not only a tool to ensure vigorous attention is paid to the 'uncertainty' of negative impacts on the environment but that it is also a transparent and inclusive decision-making process. As mentioned earlier, the Precautionary Principle has been assimilated into many international and regional environmental agreements, examples of which include the Río Declaration on Environment and Development and Agenda 21 (Deville *et al.* 1997; Harremoes *et al.* 2002). New Zealand is a signatory to many of these treaties and therefore has either a legal or moral obligation to include the axioms of the Precautionary Principle into its statutes and/or policies. Additionally, some socially-minded private enterprises have recognised that the Principle may have long-term economic benefits for themselves as well.

The Precautionary Principle in its entirety may not be applicable in the case of oil spills as we know the ramifications of what thousands of tonnes of oil into coastal areas and along coastlines will do. Consequently, it would be advantageous for all parties concerned such as the government and the oil industry and shipping companies to prevent such a known threat from being realised in New Zealand.

## 2.4 Chapter Summary

The considerable ongoing environmental research and the abundance of information that permeates our lives, regarding the destruction of the natural environment, demonstrate to us that we are slowly destroying the earth. Various international organisations such as the WCED and the United Nations recognised this fact nearly 20 years ago and began the 'imperative' to sustain the environment. This was initiated with the introduction of Sustainable Development, an ideology that today has global recognition.

Anthropocentrism, which assumes that humans are valued above all other beings, and capitalism, the macroeconomic system employed by many nations, still dominate the majority of human activity. Capitalism embraces the idea that all environmental impacts caused by economic enterprise are independent and therefore need not be accounted for. Consequently, much of the environmental damage that has already, and continues to occur, has as yet to be paid for by the human race. Although sustainability has become a global imperative its implementation as Sustainable Development has followed diverging perspectives. Two discussed in this thesis were from an economic perspective. The first and far more 'material' supposition is Weak Sustainability, which regards the 'totality of nature' including all resources to be substitutable. As a result, this substitutability would ensure that economic growth is sustainable.

This point of view contrasted with the other more 'conservative' premise of Strong Sustainability or the non-substitutable paradigm. Under this hypothesis not all of nature or its resources can be substituted by either the production of goods and utilities or by technological advancement. Hence, Strong Sustainability admits that there is a need to protect some aspects of nature to secure not only current living standards (of the western nations) but also the continuation of the human race.

Other ideologies place quieter emphasis on environmental sustainability and eco-centrism. At the core of these perspectives 'nature' is considered to be of paramount importance, as without 'nature' humans would not exist. Within the Sustainability Imperative it was acknowledged that humans are not just

interconnected or interdependent on the environment, but that in the most fundamental way we are totally reliant on 'nature'. The position of human-kind in relation to the environment should have therefore begun with precaution. Though this did not occur it is possible that it is not too late. Under the Precautionary Principle if there is scientific uncertainty of the harm that the natural environment may be exposed to by new human activity, it would not be undertaken. This does not mean that no harm will be done or that no risks will be taken, but that they will be reduced or compensated for. Further the Precautionary Principle allows a community, where the potential activity will be, to have a voice in the decisions that affect it.

In conclusion the aim of this research is to discover, in both law and reality, the extent of New Zealand's ability to guard itself from a major oil spill. To achieve this and answer the research question, firstly some of the existing economic and environmental theoretical perspectives were outlined in this chapter. As previously revealed, many of these theories and ideals such as Sustainable Development and the Precautionary Principle are already incorporated into various international environment and maritime treaties. Therefore, it is expected with New Zealand being a signatory to most of them, that these perspectives have been integrated into our domestic statutes. One technique for developing close links between the international, national and regional provisions of marine sustainability, specifically in the coastal zone is Integrated Coastal Management (ICM). ICM connects all levels of government with the local coastal issues in a process that implements an integrated plan for the development and protection of the coastal environment. The research should determine whether New Zealand utilises the ICM approach in realizing the international treaties and environmental national statutes.

Furthermore, with the identification of the Precautionary Principle and Sustainable Management, a criterion has been indicated that can be employed to determine whether New Zealand's marine environmental legislation is proactive or reactive, in regards to our preparedness and response to an oil spill. Both these issues will be reviewed in Chapter Four. Prior to this chapter however, I will discuss how the concepts of Sustainable Development, sustainability and our 'ecological footprint' support the methodological approaches used in the research.

# Chapter Three: Methodology and Methods

The aim of this chapter is to explain how the theories described in the previous chapter directed the methodological approaches adopted in the research. To begin a clarification between the methodology and methods will be given. Then the research design will be elucidated followed by the research limitations, where I will 'place' myself with regards to the research. The reason for addressing my postionality under the research limitations is that it can be considered a constraint, although I also explain how this is addressed. The other restrictions to the research are also noted and finally the research methods are stipulated.

## 3.1 Methodology

Methodology has been defined as the general framework applied when embarking on a research topic, while the methods are instruments used to accomplish the research objectives and answer the research question. Methodology therefore is the research design and is affected by the researcher's positionality or 'philosophy of knowledge' (Davidson *et al*. 1999). The research design is defined by Yin, (1994 18) "… as the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of a study". Ergo the research design is "an action plan for getting from here to there, where *here* … [is] the initial set of questions to be answered and *there* [are the] conclusions …" (Yin, 1994 19) (emphasis in original). While positionality can be translated as a person's worldview, this can be broken down to questions of ontology "what things are there in the world" and questions of epistemology "… what really exists, as opposed to that which appears to exist but does not …" (Bullock *et al.* 2000 608). These questions of philosophy are recognised as "… essential to the research because all research makes assumptions about such issues …" Tolich *et al.* (1999 23).

Accordingly it could be reasoned, from the above statements, that the research design is derived from the theory the choices of which are a reflection of the researcher's positionality. This is supported by Davidson *et al.* (1999 6) who state that "[r]esearch helps us build or modify our theories, but those theories drive our

… [methodology]. It is only with reference to the theory that the … [methodology] makes any sense". The rationale however, as to why 'theory drives the methodology' is that key components of the theory can require a particular perspective or approach to answer the research question as the subsequent research design and researcher position illustrates.

## 3.2 Research Design

The research focuses on marine environmental legislation and the sustainability of New Zealand's coastal waters with regard to oil spills. Hence, the pertinent theoretical perspectives include Sustainable Development, the Sustainability Imperative, the Precautionary Principle, and our 'ecological footprint'. These theories then necessitated the data to be collected by certain methodological approaches. For instance, Sustainable Development is a theoretical position that "stresses an openness to a range of voices and perspectives in social inquiry … and political empowerment" (Johnston *et al.* 2000 620).

Moreover the theories of the Precautionary Principle, Sustainable Development, and sustainability perspectives are either the basis of or integrated into many, if not all, of the international maritime environmental treaties and accords that New Zealand is a party to. As such, the discourse of these multilateral agreements in conjunction with our own environmental legislation required analysis to see whether the precepts of 'conservation' had been adopted. Lastly, the concept of our 'ecological footprint' was one of the key prompts for the choice of using case studies. Specifically, the major case study is situated in the coastal environs of Northland's east coast; where the busiest shipping lanes in New Zealand are found and where New Zealand's only oil refinery is located.

In addressing theses questions and issues the initial decision was taken to adopt a qualitative approach to the research. This reflects both the limited number of oil spills in New Zealand and a deliberate choice to seek the greater richness provided by a case study than a more extensive, but less rich quantitative analysis of oil spills generally. The strengths and weaknesses of these approaches are well established (Box Three).

| **Box Three** | |
|---|---|
| **Quantitative**<br><br>• Broad, but shallow<br>• Seeks consensus<br>• Tests Theory<br>• Values detachment<br>• Less flexible<br><br>**Primary Methods Used**<br><br>• Experiments (repeatable)<br>• Surveys (large)<br>• Sampling (large)<br>• Longitudinal (lengthy time frame)<br><br>(Davidson et al. 1999 120-126) | **Qualitative**<br><br>• Rich, but narrow<br>• Seeks differences<br>• Generates Theory<br>• Values personal involvement<br>• Flexible<br><br>**Primary Methods Used**<br><br>• Key Informant Interviews<br>• Case Study/ies<br>• Discourse Analysis<br>• Focus Groups<br>• Observation |

As the research entailed an in-depth look at the issue of oil spills in the coastal marine environment and the competence of the laws governing the protection and use of New Zealand's territorial waters a qualitative approach was elected. The case studies are both descriptive and exploratory research, while the discourse analysis of the contextual framework is explanatory research. Preliminary research indicates there had been very few oil spills and because the research was primarily interested in direct exposure of spills a national survey would have been irrelevant as few people would have direct experience. Consequently a targeted approach was adopted. This enabled much richer data collection. Further to this the data gathered in surveys, sampling and focus groups are often constrained by the necessity for simplistic questions, time allocation and impediments like the researcher's knowledge of computer analysis programmes.

Upon defining 'what' and 'how' I would investigate, the research then focused on two pivotal aspects; New Zealand's international and national legislative obligations in relation to the prevention of oil spills in its territorial sea; and to provide in detail the occurrence of two oil spills in New Zealand waters. The two oil spill case studies are the Poor Knights Islands Marine Reserve (PKIMR) spill in 1999 and a 'desk-top' review of an oil spill off the Gisborne coast in 2002.

The primary focus is on the PKIMR case because it resulted in global precedent setting regulation. The Gisborne case study was undertaken because it followed

within three years of the PKIMR and provided an opportunity to cross-check some of the findings from the PKIMR case study.

## 3.3 Research Limitations

The primary limitations of this research are: bias introduced by my positionality and constraints to the ability to generalize the findings of two case studies to other places. Less significant constraints are imposed by data collection and analytical methods used and these are discussed in the sections describing the specific techniques applied. I will now 'place' myself within this research.

### 3.3.1 Researcher's Position

Tolich *et al.* (1999 37) inform us that "reflexivity means that [researchers] always remain part of the social world that [they] are studying, so [researchers] can attempt to understand that world *only* from [their] daily experience of life" (emphasis in original). This also adds the 'richness of experience' to the research as "… [t]he values of the researchers become an explicit part of the research process" (Tolich *et al.* 1999 39). This 'explicitness' however, is necessary to counteract the fact that no social science researcher can eliminate their effect on what is being researched. Consequently the researcher should continually reflect on what they do and how they do it, to ensure that the research is reflexive (Elliot, 2005).

I consider myself to be an environmentalist and even though this word can have many different interpretations; to me it is a belief in the precepts of holism and conservation. For me holism means that 'everything is connected' (i.e. that all eco-systems relate to each other and therefore polluting one will usually damage another) and that all non-human species have an intrinsic value. The precept of conservation, not only incorporates the Precautionary Principle, but also the concepts of 'reduce, reuse and recycle', 'alternative' resources and 'actual' sustainability.

It has been said by Limb *et al.* (2001 271) that "[t]he researcher's position is often raised in theoretical writings … [but can be] relative to methodological … issues".

This is the case here as I have a personal interest in the research topic, as raised in the Introduction Chapter, because a planned scuba dive, at the PKIMR, was prevented due to an oil spill. My frustration was momentary as the fear that the reserve could have been ecologically damaged, possibly for decades, seemed to be the 'reality'. These concerns however, were only the catalyst. For many years, and especially since I have returned to university, I have become aware that there are serious environmental issues regarding the sustainability of various human practices. This was highlighted by the situation with the shipping traffic off Northland's east coast, as both the resource consumption and waste assimilation capacity of, or 'ecological footprint' on, the marine environment from shipping around the marine reserve may be reaching its maximum load. My direct experience of this minor oil spill, though distressing at the time, focused my attention on the possibility of a major oil spill in New Zealand's coastal waters and this then prompted the research. Furthermore, the familiarity of this oil spill incident influenced my choice not only of the site but also the methodological approach (case studies). Therefore, with both of these more eco-centric philosophies as my worldview, I position myself as a strong advocate for the preservation/protection of the environment. As such, though I do acknowledge that it is improbable, if not impossible, to return specific eco-systems to their original state, I believe that human-kind could stop some of the more damaging economic practices and decelerate others.

With this understanding of myself, I will endeavour to represent all my findings with reflexivity. In this I draw on Tolich *et al*. (1999 37) who have described reflectivity as meaning that researchers "attempt to understand … *only* from [their] daily experience of life" (emphasis in original). The only other limitations to my research were the subsequent availability of key informants and time constraints.

### 3.3.2 Non- acquiescence of Key Informant/Stakeholder

Due to my obligation to ensure objectivity and my responsibility to the research to hear and understand all sides of the major case study, I requested an interview with the Australia Direct New Zealand Direct Line (ANZDL) whose ship was culpable for the oil spill. The initial contact was via the telephone. Nevertheless,

after several phone calls to the person, I was informed could be of assistance, at the company's offices in Auckland and e-mails to the company's claims office in Sydney, with no reply, I asked to talk to someone else in authority. Finally, the manager of the Auckland office, though he declined an interview, did answer two of the questions that I asked. The answer to the first question was a 'brush off' and the answer to the second question, though unverifiable, rang true. Though I did not have the opportunity to ask all the questions that I wanted to from this key informant, most of my queries were answered through the examination of other investigative and court transcripts.

### 3.3.3 Time Constraint

Another key informant/stakeholder that an interview and/or documentation was requested from was the Department of Conservation (DOC). This government department was approached as it has jurisdiction over and responsibility for, the land area and all flora and fauna of the Poor Knights Islands. Three weeks before visiting Whangarei to conduct the fieldwork, the department was contacted to arrange an interview. After several calls it was established that the person who could have helped me the most had resigned from the department one week prior to my initial phone call. I was informed that the only other person I could interview was away on holiday, until after my time in Whangarei. Over the 14 days that I was in Whangarei, I contacted DOC several times to see if I could at least look at their records of the PKIMR oil spill. This also proved to be pointless as the filing clerk was not available to look for the files. Thus, all my attempts to either interview a department representative or collect documentation prior to and during the fieldwork were unsuccessful.

This Department could have been added to the list of non-acquiescent informants/stakeholders as it appears that they did not want to be interviewed. However, upon arrival back at the University there was an e-mail from the department. It stated that the documentation I had requested had been found and was ready for my perusal. I then asked for copies to be sent down to me, but as the person who I had been conversing with did not know what was relevant or irrelevant and there was 'quite a lot' of it I was advised to return to Whangarei to look for myself. This option was unavailable to me due to various constraints, the

main one being time. Therefore, no further action was taken regarding this informant. In the final resolution of this thesis I am confident that any information DOC may have provided has been derived from other sources.

Similar constraints also emerged when endeavouring to build a chronology of key events. I requested from the Ministry of Foreign Affairs and Trade (MFAT) clarification of seemingly inconsistent, even contradictory, information as to when New Zealand acceded to the International Maritime Organisation as the irregularity only became apparent late in the research. A series of emails with the relevant MFAT official meant that when this thesis was submitted MFAT was unable to confirm the dates of accession despite seeking advice from other national or international bodies.

## 3.4 Methods

Before discussing the methods used in this research, an explanation of 'triangulation of data' is required. This axiom is a generalisation that necessitates a further description of the qualitative approach.

Bouma, (2000 173) suggests that "[t]he aim of qualitative research is often to describe in detail what is happening in a group … community [or area]". Consequently qualitative research has certain characteristics and Stake, (1995 47-48) has defined them as holistic, empirical, interpretive and empathetic. One type of qualitative research puts the emphasis on what one can observe, including the participants and/or informants. The researcher relies more on intuition, is able to recognise problem-relevant events and understands the interaction between themselves and the subject. Finally, the design can be responsive to changing events, the informer may have compatible worldview and/or values and the reporting allows a vicarious experience (Bouma, 2000; Stake, 1995). Further to this Stake, (1995) suggests that good qualitative research also includes the attributes of having observations and interpretations that are validated.

Although most of the above characteristics of qualitative research are self-explanatory, the 'triangulation of data' needs further interpretation. It has been proposed that 'triangulation' in research is a set of protocols. That "data source

triangulation is an effort to see if what we are observing and reporting carries the same meaning when found under different circumstances" Stake, (1995 113). In other words it is a form of validation to ensure that the data from one source is confirmed as true and reliable from other sources.

### 3.4.1. Case Studies

The use of case study/studies in research permits the researcher to analyse the reality of an issue including social and cultural interrelationships. Case studies are representations of a particular event or set of circumstances that can be explored within the context of political, economic, cultural, social, historical, temporal and spatial confines (Stake, 1995). For this reason Yin, (1994 1) states that "case studies are the preferred strategy when 'how' or 'why' questions are being posed … and when the focus is on a contemporary phenomenon within some real-life context". Accordingly, this was another reason for the use of case studies as the research question focuses on a phenomenon that has a real-life context.

According to Yin, (1994) there are six main methods for gathering evidence in a case study. These are documentation, interviews, participant observation, direct observation, archival records and physical artefacts and though all six have strengths and weaknesses, none has complete advantage over the others. In the major case study, four of these sources of evidence were used being; direct observation, interviews, documentation and archival records. Although interviews are considered a tool under the methodological approach of a case study, in this research I have separated them as a distinctive investigative technique. The reason for this is that the major case study enquiry consumed only a quarter of the interview time. Therefore, the methodological approach of 'key' informant interviews will be discussed separately in the chapter.

The major case study, being an oil spill at the PKIMR in 1999, is an examination that includes;

- A history of the geographical area (incorporating indigenous issues); and

- The cleanup operation and identification of the party responsible for the oil spill; and
- The Environment Court case; and
- The international legislative outcome from the oil spill

A field visit to the site of the case study can aid the contextualization of the research topic and is another technique for the collection of evidence. This direct observation can be formal, whereby the researcher specifically goes and observes and these observations are noted and measured or informal which can be noting down your overall impression while at an interview (Yin, 1994). As I was visiting Whangarei at the time the oil spill occurred at the PKIMR, the initial direct observation required the remembrance of the community's reaction and emotions at the time. The second observation, while in the area conducting interviews in 2004, was a visit to the marine reserve to witness the remaining oil spill evidence firsthand. Both these direct observations were informal and have aided in the comprehension of the research question and theory.

The documentation and archival records include; the initial investigation reports, maps and charts, and the Environment Court case findings and sentencing of the oil spill perpetrator. Information on the management of the oil spill cleanup and general documentation concerning the coastal area of Whangarei and the PKIMR was also gathered. Other sources of information specific to this case study included newspaper articles, a television news item and internet web sites.

The 'desk-top' review of the second oil spill case study is the grounding of the Jody F Millennium, a bulk carrier, off the Gisborne coast on the 6th February 2002. The prompt for introducing this second case study is that the two oil spills are to some extent comparable. Although the main case study was a minor spill and the 2002 incident was a medium spill there are similarities. These include the fact that they both made landfall, they both required a clean-up operation and the ultimate reason for the spills appear to be human error. Additionally, the 'desk-top' review of the second case study introduces related information for analysis that the major case could not provide.

### 3.4.2 Interviews

Qualitative approaches are generally seen as collaborative and unexploitative research and as such often the researcher and the researched in the interview can discover commonalities and exchange views in an environment of safety and support. Of the three types of interviewing techniques (structured, semi-structured and unstructured) the semi-structured interview offers the informants both flexibility and space to voice their views, while still allowing the interviewer the ability to pursue the questions. This atmosphere of openness and interaction between the researcher and the researched also allows for unforeseen issues to be aired (Limb *et al.* 2001; Yin, 1994).

Armed with this knowledge and to gather as much insight as possible to the research, semi-structured interviews were held with most of the key informants/stakeholders involved. In order to identify the key informants/stakeholders, a list of the government authorities, that have jurisdiction over the coastal marine environment, was compiled and contact was initiated via phone to discover the appropriate individual/s to interview. Of the three government agencies; two were extremely receptive to contributing to the research and the third after several attempts, appeared too busy or disorganised to help (as identified under the research limitations).

The next major party involved with the PKIMR oil spill were the perpetrators of the spill, but they declined. As the government agencies could only provide one side of the story, I also contacted one NGO, a private citizen and the local Maori Iwi who were all connected to the major case study area. They all accepted the invitation to discuss the topic. Most interviews were arranged by phone followed by written confirmation, which included a copy of the consent form for the informant's perusal. Four of the five 'face to face' interviews were undertaken at the interviewee's workplace and the fifth was conducted at the Auckland Regional Council's cafeteria. The sixth interview was via telephone and e-mail conversations. One interview lead to a new key informant, who had not previously been approached, and this contact, though not interviewed, proved extremely helpful with necessary documentation and archival records. Later in

the research further information was received via telephone calls and emails from various government agencies (Box Four).

| **Box Four** | **Informants and/or Stakeholders** |
|---|---|
| Wade Doak | - Photographer, Author and Environmentalist |
| John Lee-Richards | - Maritime Safety Authority (MSA) (Auckland) |
| Ian Niblock | - Northland Regional Council |
| Hori Parata | - Ngati Wai Trust Board |
| David Pattimore | - Forest and Bird Society (Northland) |
| Hans Wetendorf | - Maritime Safety Authority (Whangarei) |
| Other MSA Personnel* | - Te Atatu and Wellington |
| Personnel* | - Dept. of Conservation- Invercargill, Wellington Regional Council, Ministry of Trade and Foreign Affairs |
| | (Asterisks – No consent forms) |

All the interviews conducted in person were recorded on audiotape for later transcription. This electronic aid and the semi-structure of the interviews provided several important advantages for the interviewee and myself. Firstly, it allowed for a flexible and open interaction between us, and the freedom to express and explore issues not directly relevant to the research. Secondly, upon transcription, it ensured that misinterpretation was minimised and finally the respondents could review the transcript, if they wanted to ensure its reliability and factualness. Though the checking of the transcripts by the interviewee had the potential for the interviewee to change meanings or become less candid, this did not occur with the one informant who requested a review. Written permission for the interviews were received from all interviewees

The interview questions and/or angle of approach varied depending on who I was interviewing. The interviews centred on three main ‘themes’;

- The oil spill at the Poor Knights Islands Marine Reserve, which included discussion of the clean-up, short and long-term impacts and the interviewee's thoughts and opinions of the incident; and
- Legislation, policies and regulations regarding the coastal marine area, the shipping industry and the Oil Spill Response Team (OSRT); and
- The application/approval of the mandatory 'no-go' area for all ships.

Overall the interviews were conversational, thereby allowing the commonalities between the researcher and the researched to be expressed and the free flow of opinions and information to be adopted.

The approach to analysing 'fieldwork' can take many forms, though Sarantakos (cited in Tolich *et al.* 1999 8) "characterises the process of qualitative data analysis as involving a cycle, [that involves] data collection – data reduction – data organisation – data interpretation … [and then back to] data collection". This cyclic approach can combine both inductive and deductive logic, because it develops from the empirical data of the research (Tolich *et al.* 1999). This style of analysis of the interviews was chosen mainly for its simplicity and conciseness. Appropriately, following the end of the interviews the transcripts were read to identify the key areas and issues relevant to the research. Included in this reduction of data were the confirmation of exact phraseology from one interview, and the completion of the transcript summaries. Further to this, due to the information provided by one interviewee (previously referred to) additional information was collected, thereby continuing the cycle. The next step was the data organisation, which involved the recognition of both the commonalities and differences apparent in the data. Finally, the interpretation of the data was made and this is where explanations are presented and the conclusions are drawn.

### 3.4.3 Discourse Analysis

The methodological approach of discourse analysis is perhaps the most difficult to characterize, this is because the phrase 'discourse analysis' and what constitutes 'discourse' is ambiguous. For instance Howarth, (2000 3) states that "[f]or some, discourse … is a very narrow enterprise that concentrates on … utterance/s … [while] others see discourse as synonymous with the entire social system, in

which discourse literally constitute the social and political world". Fairclough, (1989) and Schiffrin, (1994) however, identify 'discourse' to be both speech and written text or any 'language in use'. This description of discourse is not only accepted by Flowerdew *et al.* (1997) but expanded upon. They assert that as the 'field' of social science research is now anything from a cinema to an art studio, then the 'text' (discourse) can be defined as a film or painting. As such discourse could include all forms of communication (Flowerdew *et al.* 1997).

There are also many ways to approach the analysis of discourse as Fairclough, (1995 viii) stipulates "… discourse analysis is not a 'level' of analysis …, but an exploration of how 'text' at all levels work within socio-cultural practices". This ambiguity of both what translates as discourse and discourse analysis continues with the actual methods or techniques employed to analyse discourse. Although there are common 'tools' such as a computer programme that can be used to explore the information, the quality and nature of the data that is received depends on the software programme used. An example of a programme is INVIVO text analysis which will show the researcher, depending on what the programme is asked to do, where and how many times specific words and/or phrases have been used in the text. This method was not used in this research as primarily it would not have supplied the information required, but as mentioned earlier my knowledge of computer analysis software is limited. Another method is 'reflexive reading' that basically means reading the text with a critical eye. Theoretically the analysis that resulted from this technique would incorporate the values held by the researcher as previously acknowledged by Tolich (1999). This is supported by Fairclough, (1992 8) who emphasizes that "as there is no set procedure for doing discourse analysis; people approach it in different ways according to the specific nature of the project, as well as their own views of discourse". Further to Fairclough's statement, Gee, (1999 5) asserts that any technique used depends on the perspective of the researcher because as

> [a]ny method of research is a way to investigate some particular domain … people with different theories … will use different methods for their research … [as] methods [are] essentially … "tools of inquiry" and strategies … designed to describe and explain what the

> researcher takes to exist [epistemology] and to be important in a domain.

Additionally Gee, (1999 6) stresses that "[s]uch tools and strategies are continually and flexibly adapted to specific issues, problems, and contexts of study". Therefore, in accepting Fairclough's and Gee's premise, the contextual framework of this research is first and foremost an explanation of what is important to the domain. Consequently, to begin with, the context chapter identifies the international and national legislation, policies and agreements that govern the use and protection of New Zealand's coastal waters. By recognizing this legislation the first objective of the research, being to establish what legislative measures have been taken to lessen the risk of an oil spill, will have been ascertained.

The second objective is to substantiate the effectiveness of the both the proactive and reactive laws and/or policies for addressing marine oil spills. To address this objective it is separated into two parts, firstly the relevant legislation, policies and agreements that pertain to oil pollution in the marine environment will be analysed to verify whether they are proactive or reactive. The criterion for this determination, under this research, is 'what initiated the laws or policies' and is also presented in Chapter Four. However, as most of the legislation, policies and/or agreements are applicable nationwide and 'to substantiate the effectiveness of the … legislation' the analysis of the two case studies in Chapter Six should conceivably illustrate whether these statutes are realized in a real-life context.

Finally, 'language' can generate or support existing relationships and socio-cultural practices and hence they can be a powerful tool in the construction and continuance of societies (Fairclough, 1989; Howarth, 2000). To demonstrate, this research is analysing some of the environmental laws of New Zealand. Although I am not specifically analysing words or phrases, though this may occur, in the discourse it should be noted that there is a power relationship between all legislation and the public. Thus, one might consider that it does not matter what language is employed in the legislation as the community will obey the law. Conversely the language used, especially in environmental legislation, is usually words or phrases that will ensure, not only, the acceptance of the law by the

public, but also to ‘advance’ the society. Depending on what your beliefs are this may not be a bad thing as laws are supposed to be for the ‘social good’ and here in New Zealand the ‘social good’ not only includes people of today but future generations.

## 3.5 Chapter Summary

This chapter introduced the difference between methodology, as the overall structure of the research and the methods as the mechanisms used to carry out the investigative task. Under the research design an explanation was proffered of how the theories, such as Sustainable Development, influenced the decision of the methodological approaches chosen. How I position myself within the research and the idea of reflexivity was then discussed under the research limitations. The next section elaborated on the qualitative methodological approaches used and laid out the methods. To maximise the answers to the thesis question and objectives the ‘triangulation of data’ technique was employed. This research device utilises two or more methodological approaches to secure as much information as possible. Accordingly, the three mechanisms, case studies, interviews and discourse analysis, were applied and the style of interpretation was considered. Having substantiated both the research design and the methods used to collect the data the analysis, interpretation/discussion and conclusions are presented in Chapters Four to Six.

# Chapter Four: Contextual Framework

The purpose of this chapter is to 'explain' the legislation as it pertains to the 'particular domain' of the research. So to answer 'how oil spills are prevented in New Zealand's territorial waters?' the first objective is to explore and define what precautionary legislation is in place to protect our marine environment from oil pollution. I begin with the identification of international maritime agreements. The reason for this is that many of these universal treaties, due to the nature of the oceanic environment and the shipping industry, are the bases for New Zealand's maritime legislation, which is described next. In addition, the national legislation that focuses on marine oil spills will be analysed as to whether it is proactive or reactive, though this analysis will only be realised in Chapter Six when the two case studies are evaluated. Prior to presenting New Zealand's current legal maritime regime, a synopsis of how nation-states began co-operating on environmental legislation and a brief outline of how worldwide maritime law was established are advanced.

## 4.1 Introduction

Over the last four decades, ecological threats and some considerable environmental disasters have guaranteed that one of the main issues on all political agendas of industrialised economies is environmental sustainability. This 'awareness' of ecological damage, initially was on a local basis and in the sixties part of the damage from pesticides, was air and water pollution. Though these problems did not disappear, other more destructive ecological crises developed and became more wide-spread. For instance, in the seventies nuclear radiation and other toxic waste dumping generally received the greatest attention, whereas by the eighties it was the denuding of rainforests, fish stock depletion and the 'hole in the ozone'. Finally, through the nineties and into the 21$^{st}$ century, international environmental issues such as global warming/climate change, biodiversity/biosecurity and the waste of and pollution of resources became of primary concern (Hewison, 1994; Williams, 1997). Nevertheless, until the mid-eighties many industrialised nations, especially in Europe, still acted independently with regard to environmental preservation and protection. The

Chernobyl disaster changed this concept, as acknowledged by President von Wiezsacker of the Federal Republic of Germany in 1986.

> The accident at Chernobyl dramatically brought home to us the need for close international co-operation … The repercussions of the accident for large areas of Europe convinced even the last sceptics that frontiers between countries, alliances or political systems become completely insignificant in the event of … [environmental] disasters. They do not afford the least protection. They must therefore not impede the requisite cross-frontier action … (Hohmann, 1994 xvii).

Thus, Chernobyl and other environmental disasters have consolidated the idea that once autonomous nation-states have to work together to stop the destruction of the environment. This wider acceptance that environmental problems could no longer be seen or dealt with in isolation ensured the growth of many new, and the revalidation of other, Multilateral Environmental Agreements (MEA)[1] or treaty's (Fischer *et al.* 1995; Hohmann, 1994). Though these treaties have not worked (yet) for many of the more serious and collective environmental problems, like biodiversity and global warming, some have been effective on several of the less daunting human-produced dangers to the natural world. One of these is the actuality of oil spills in the marine environment, which have lessened over the years through the implementation of collective maritime laws.

Before many of these laws were instigated the principles of 'mare liberum' (freedom of the seas) and 'res nullius' (nobody's property) had been internationally accepted for at least four hundred years (Falque *et al.* 2002). Over the last two centuries however, due to increasing human population and

[1] Under international law, MEAs are the predominant model used to enable countries to work collectively on regional and worldwide environmental issues. Depending on the content, seriousness and/or previous international legislation, an MEA can be structured as either "hard-law" or "soft-law". Hard-law MEAs constitute legally-binding agreements and actions that if disregarded by a participatory nation-state, said country can be held accountable for the contravention through an international court of law. In comparison soft-law MEAs are not legally-binding, but rather provide a sense of 'moral obligation' to the participatory country (Hewison, 1994; Williams, 1997). New Zealand has ratified both types of MEAs and assimilated many of the rights and obligations from these various accords into national legislation (Ministry for the Environment (MfE), 2006).

technological advances in reaping marine resources, the idea of the oceans being a 'global common' was being undermined by some nations who were claiming ownership of the marine environment. Upon recognizing this, the United Nations convened the first conference on the 'Law of the Sea' (LOS) in 1958. The conference initiated comprehensive international laws to regulate and standardise the use of, and to lessen the abuse of, the world's oceans and seas which upon signing then ratifying[2], all participatory nations would abide by. The outcome of the conference was four 'Geneva conventions' that were titled the 'United Nations Conventions on the Law of the Sea' or better known now as UNCLOS I (IUCN, 1995; David *et al.* 1997).

Since UNCLOS I and the subsequent UNCLOS II and due to disputes regarding oceanic 'claims of dominion' and the amplification of environmental issues, which necessitated governing legislation, another conference was convened. The outcome of this symposium in 1982 was UNCLOS III, which entered into force in 1994. This third convention on the LOS, especially, provides international legitimacy for governance arrangements of the seas and oceans and because New Zealand has ratified UNCLOS III in 1995 this convention is fundamental to New Zealand's marine management (Ministry of Foreign Affairs and Trade (MFAT), 1997).

## 4.2 International Maritime Agreements

Under UNCLOS III, New Zealand has both powers and responsibilities for the seas that we claim through sovereignty. These ocean domains or offshore zones are executed in New Zealand legislation through the Territorial Sea, Contiguous Zone and Exclusive Economic Zone Act 1977 and are;

- a territorial sea of up to 12 nautical miles (nm);
- a contiguous zone of up to 24 nm;

[2] "Treatises [in this instance MEAs] come into force and effect at international level according to their own terms. In some cases … simply on *signature* … [though for] more important or complex treatise, the final acceptance … may require substantial changes in governmental policy or national law … [thus] the text being established by signature … [does] not become binding until further action is taken by the state in question … commonly referred to as ratification … or acceptance or approval or accession" (MFAT, 1997 17) (emphasis in original).

- an exclusive economic zone (EEZ) of up to 200 nm; and
- the continental shelf (beyond the EEZ, but not beyond 350 nm).

For New Zealand these 'offshore zones' represent 4.1 million sq. kms of ocean and seabed to use, but also to conserve. Generally the most sensitive and fragile marine ecosystems are within the boundaries of the territorial sea and along the coastline, which in New Zealand corresponds to approximately 15,000 kms of coastline and several groups/large offshore islands (Rennie, 1993). The other reality is that the coast is where the most human interaction and activity with the marine environment occurs. So although coastal nations have sovereign rights over the resources within the 200 nm EEZ, UNCLOS III moderates these rights with the obligation to protect and conserve both the oceanic domain and its natural inhabitants. Therefore, as the obligations of LOS (I, II and III) that relate to the preservation and protection of the marine environment are the foundation of many past and future international marine conservation agreements, the two key convention principles germane to the research topic are summarised.

### 4.2.1 UNCLOS III - The General Principles for the Preservation and Protection of the Marine Environment

The preservation and protection of the marine environment encapsulates many areas of possible destruction or damage from over-fishing to sand and seabed mining. This thesis however concentrates on oil pollution in the marine environment thus UNCLOS III's section on marine pollution is of primary interest. Firstly, it is appropriate to define pollution. Under Article 1.4 of the LOS convention, pollution of the marine environment means;

> [T]he introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as to harm living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, and impairment of quality for use of sea water and reduction of amenities (IUCN, 1995 35).

This is an expanded definition of pollution from previous LOS conventions as there was a need to incorporate new pollutants such as those under 'indirect' human introduction and 'energy'. Further to this the convention required the inclusion of the 'precautionary principle' and accordingly added 'likely to' with respect to the introduction of substances that result in deleterious effects (IUCN, 1995). Thus, a primary obligation is to prevent, reduce and control pollution. Accordingly, coastal states ought to anticipate and hopefully avoid marine pollution, but if unavoidable reduce or control it. This principle also clarifies the types of pollution. These comprises: 'use of technologies' and the introduction of new or alien species and toxic, harmful or noxious substances from land based sources, vessels and offshore installations. Under this 'duty of care' if pollution occurs, monitoring, assessment and reporting to the UN may be required (UN, 2005).

The other key general principle involves the 'response to marine pollution emergencies'. Should there be imminent or actual pollution from a vessel accident on the high seas a maritime nation may take protective action to prevent damage to its coastline or related interests. In addition the country must notify any neighbouring states that may also be in danger of being polluted and the relevant international organisations. Finally, the neighbouring states are to cooperate in the cleanup of the pollution and in preventing or minimising the damage (UN, 2005). Under this principle, the *International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990* (OPRC) and the *South Pacific Regional Environmental Program* (SPREP) New Zealand has a reciprocal arrangement with Australia via a Memorandum of Understanding (MoU). The intergovernmental cooperation can include assisting in an oil spill cleanup and aiding in the identification and possible detention of the perpetrator of small and/or non-accidental oil spills (Hewison, 1994).

Although this principle now incorporates all substances that could 'leak' from a ship, its predecessor the *1969 International Convention Relating to Intervention on the High Seas in case of Oil Pollution Casualties* was originally concerned with oil spills from tankers. Though as the title of this convention suggests 'casualties' included the crew and vessel and therefore the 1969 treaty was one of a number of international treaties that mandated vessel safety at sea. The reason

many maritime treaties include protection for ship personnel is that when the United Nations was established in 1948 they founded the first institution to promote 'ship safety' world-wide (IUCN, 1995). This administrative body, now known as the International Maritime Organisation (IMO), was created specifically to manage the formulation and implementation of a legal and institutional framework for maritime safety. Initially this agency of the United Nations was only concerned with improving the safety of maritime operations and this still remains its chief responsibility. Nevertheless, over time and with increasing global maritime trade and the nearly universal drive for environmental protection, other concerns regarding vessels and the marine environment required attention. The IMO, as one of the leading maritime institutions, incorporated these 'new problems' and realized them in Article 1 (a) of the organisation's convention as summarised below;

> The purposes of the organisation is to "provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships". The organisation is also empowered to deal with administrative and legal matters related to these purposes (IMO, 2004 1).

With this mandate the IMO, under the auspices of the UN, has implemented several major hard-law MEAs to counteract the pollution of the world's oceans. The first was the *Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter*, better known as the London Convention and was adopted in December 1972 (David *et al.* 1997).

### 4.2.2 The London Convention

The main objective of the London Convention is to prevent and control the dumping of waste and other matter at sea and originated because there was an

increasing amount of industrial waste being disposed of into the oceans and seas. The Convention defines dumping as follows;

> [A]ny deliberate disposal at sea of wastes or other matter from vessels aircraft, platforms or other man-made structures … but does not include disposal of wastes incidental to, or derived from normal operations of vessels, aircraft, platforms or other man-made structures, or placement of matter in the sea for a purpose other than disposal (Hewison, 1994 19).

Initially the Convention only sought to restrict the discarding of waste that was known to be harmful to the marine environment. Nevertheless, with the advent of the precautionary view the Convention requires that, unless it is proven to be harmless and there is no alternative, all dumping at sea is to be terminated. Under a 'list' system of three annexes, the Convention defines what constitutes waste to the marine environment and the factors relating to oceanic disposal. Annex I lists the waste that is 'absolutely prohibited' from being disposed of at sea and these include mercury, high-level radioactive waste and oil. Annex II states the waste materials such as arsenic, fluorides and lead that require a special dumping permit. Finally, Annex III catalogues the requirements necessary if a permit, either special or general, is to be granted. These permits are to be issued by the national authority in whose domain the dumping is to be done (David *et al.* 1997). In New Zealand the granting of 'dumping' permits was originally authorised by the Ministry of Transport however with the enactment of the RMA in 1991, a resource management consent is now obligatory for dumping within the limit of the Territorial Sea (Hewison, 1994).

Though New Zealand did ratify the London Convention, in 1975, we were only one of 63 countries to do so. David *et al.* (1997) considers that this lack of worldwide commitment has ensured that oceanic dumping of waste is still not as controlled as it could be. This view may have been rectified as due to the subsequent ratification of UNCLOS III, support for the London Convention has been achieved through the following axioms:

- clarification of the rights of coastal states to prohibit dumping off their shores;
- requires states to enact measures domestically that are at least as effective as the global requirements; and
- encourages more states to participate in the international regime (Broadus *et al.* 1994 229).

For those states that did accept the London Convention another part of their obligation is to any regional agreements coordinated under the Convention. For New Zealand this meant the ratification of the *Protocol for the Prevention of Pollution of the South Pacific Region by Dumping 1986* and it came into force here in August 1990 (Hewison, 1994). This Protocol requests the same requirements as the London Convention, though the area covered by the Protocol is set by the *Convention for the Protection of Natural Resources and Environment in the South Pacific Region* under SPREP and includes New Zealand.

### 4.2.3 MARPOL 73/78

Nearly a year after the adoption of the London Convention, the IMO introduced the *International Convention for the Prevention of Pollution from Ships 1973*, more widely recognised as MARPOL. The MARPOL Convention never entered into force and eventually it was amended to the *Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships.* This Protocol absorbed the Convention and is now known as MARPOL 73/78. It entered into force in October 1983 and by 1989 only 52 states had signed the Protocol (Hewison, 1994). It is unclear as to whether New Zealand was one of the initial signatories to the Protocol, and my various attempts to clarify this point and to determine the date that New Zealand ratified the Protocol have only been semi-successful. From the information received, from several government departments, New Zealand has ratified parts of MARPOL 73/78. As detailed below the Protocol is broken up into annexes of the main types of marine pollution from ships and the MSA provided the 25 September 1998 as the date New Zealand accepted Annex I of the Protocol (Lane, 2006 (pers. com.)). Of the other five annexes, New Zealand is a party to Annex II, III and V though no ‘date

of ratification' of these annexes was discovered by the time this thesis went to print (Richardson, 2006 (per. com.)).

The MARPOL Protocol's objective is "to preserve the marine environment through the complete elimination of pollution by oil and other harmful substances and the minimisation of accidental discharge of such substances" (IMO, 2004 1). Again, MARPOL 73/78 was not the first treaty to prevent oil pollution. The forerunner was the *International Convention for the Prevention of Pollution of the Sea by Oil 1954* (OILPOL). New Zealand ratified this treaty and the 1962 Amendment in June 1971 and both became effective in New Zealand from September 1971 and were implemented through the Marine Pollution Act 1974 (Nolan *et al.* 2005).

Furthermore in 1976, New Zealand endorsed the 1969 Amendment to OILPOL which entered into force in 1978. This convention was primarily concerned with, and focused on, oil pollution that resulted from routine tanker operations, which were considered the major cause of marine oil pollution at the time. MARPOL 73/78 recognised that operational discharges of oil were not the only causes of marine pollution from ships. As a result, the Protocol has six annexes, each to provide the regulations to prevent and control specific pollution from vessels and each with its own 'entry into force' date. As oil pollution is of interest, this is the only annex that is considered in detail (Box Five).

**Box Five** **MARPOL 73/78 Annexes**

**Annex I:** Prevention of Pollution by Oil (Entry into Force – 2 October 1983)
Oil operational discharges from ships are allowed only when all of the following conditions are met;

- the total quantity of oil which a vessel may discharge … whilst under way must not exceed 1/30,000 of the total cargo carrying capacity of the vessel;
- the rate at which the oil may be discharged must not exceed 60 litres per mile travelled by ship; and
- no discharge of any oil … within 50 miles of the nearest land.

**Annex II:** Control of Pollution by Noxious Liquid Substances
(Entry into Force - 6 April 1987)

**Annex III:** Prevention of Pollution by Harmful Substances in Packaged Form
(Entry into Force- 1 July 1992)

**Annex IV:** Prevention of Pollution by Sewage from Ships
(Entry into Force - 27 September 2003)

**Annex V:** Prevention of Pollution by Garbage from Ships
(Entry into Force - 31 December 1988) (Hewison, 1994 20).

As these annexes show, it can take decades for the implementation of measures to prevent and/or control pollution of the marine environment, but New Zealand has consistently demonstrated over a long period a commitment to address such issues. One of the main reasons, for delays in agreement and implementation, is the time and costs necessary to allow the shipping industry to adopt or adapt to new criterion. The standards can include new equipment (both on the vessels and at the ports), new operating methods, new construction standards for ships and even new guidelines on officer-crew communication and training (IMO, 2004). One of the most effective amendments to MARPOL 73/78, in minimising major oil spills from vessel accidents, was to declare that all new oil tankers would be built with double hulls[3] this included all oil tankers under construction at the time (Falque *et al.* 2002).

While the new standard for tanker construction (double hulls) was modified under MARPOL 73/78 it was in accordance with another IMO treaty established in 1990 which is the '*International Convention on Oil Pollution Preparedness, Response and Cooperation 1990* (OPRC). The goal of this Convention is for coastal states to "recognise the serious threat to the marine environment by oil pollution … [and

[3] "A double hull is a ship hull design and construction method where the bottom and sides of the ship have two complete layers of watertight hull surface: one outer layer forming the normal hull of the ship, and a second inner hull which is … further into the ship … [by] a few feet, which forms a … barrier to seawater in case the outer hull is damaged and leaks" (Wikipedia, 2006 1).

to be] mindful of the importance of precautionary measures and prevention to avoid oil pollution in the first instance" (Cameron, 1993 5-6). Accordingly, the standards of this convention are preventative to ensure the environmental threat is not realized. While New Zealand is a party to OPRC, the Convention (for New Zealand) only came into effect on the 2nd of October 1999, which is indicative that despite New Zealand's ongoing commitment to the London Convention and OILPOL, this particular convention was not a high priority for implementation (Richardson, 2006 (pers. com.)).

### 4.2.4 Oil Pollution Liability

The last international treaty specifically concerning oil pollution that New Zealand has ratified is the *International Convention on Civil Liability for Oil Pollution Damage (as amended) 1969* (CLC). The CLC entered into force in 1975, though it was not effective in New Zealand until July 1976. As the title of the Convention implies the costs of an oil spill, (the clean-up, environmental and/or economic damage) is a private liability and as such will belong to the registered owner of the oil tanker involved (David *et al.* 1997; MfE, 2005).

Both the CLC 1969 and the supplementary *Fund Convention 1971*[4] were inter-governmentally initiated programmes that put the onus of liability on the owner of the vessel to recompense the victims of a major oil spill (David *et al.* 1997). It should be noted however, that prior to the CLC and the Fund Convention, two voluntary compensation schemes were instigated by oil tanker and oil cargo owners to provide reparation for large spills. These funds were the *Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution 1968* (TOVALOP) and the *Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution 1968* (CRISTAL). Upon the approval of the CLC and the Fund Convention, the TOVALOP and CRISTAL shifted to being 'additional' compensation should the costs exceed both the CLC and Fund Convention

[4] "The Fund Convention was established to supplement the CLC … [as] it was … perceived that the CLC limits might not provide full compensation for the victims of oil pollution where there was a large oil spill … The Fund Convention supplements the amount available under the CLC where there … [is] "pollution damage", which is defined in the same way as under the CLC, and, either no liability arises under the CLC or the [liable] ship owner … is financially unable to meet its obligations … [or the compensation] exceeds the limit of the ship owners liability under the CLC" (David *et al.* 1997 337).

restitution (Broadus *et al*, 1994). Eventually, with the growth and general acceptance of the CLC and Fund Convention, the TOVALOP and CRISTAL schemes ceased in 1997. New Zealand did not ratify the Fund Convention until it become apparent that the TOVALOP and CRISTAL funds were to be terminated. The reason was that with the eventual discontinuation of these private schemes there would be a significant loss of protection against oil spills if countries did not ratify the Fund Convention. Thus, New Zealand accepted the treaty and incorporated the Fund Convention into its legislation through the Maritime Transport Act 1994 (MTA) (David *et al.* 1997).

### 4.2.5 Soft-Law MEAs: Rio Earth Summit

The 1992 Rio Earth Summit (UNCED) produced two major morally binding soft-law MEAs: the *Rio Declaration on Environment and Development* and *Agenda 21*. The Rio Declaration consists of 27 guiding principles of which 7, 11, 15 and 16 (Box Six) are most relevant to this research.

**Box Six** **Selected Principles from the Rio Declaration on Environment and Development**

The following principles are considered especially pertinent to the research objectives of this thesis:

> **Principle 7:** States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem…
>
> **Principle 11:** States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply …
>
> **Principle 15:** In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (UNEP, 2006 3).
>
> **Principle 16:** National authorities should endeavour to promote internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution with due regard to the public interest and without distorting international trade and investment (UNEP, 2006 4).

Of the 27 principles many existed, either wholly or partially, in previous hard-law MEAs that New Zealand had ratified, such as the CLC (Principle 16). New Zealand had also initiated Principle 11, and aspects of Principle 15 and 22 by enacting the RMA, a year prior to the Rio Declaration on Environment and Development.

Whereas the Río Declaration is a general set of guidelines, Agenda 21 is a 40 chapter comprehensive 'plan of action', with some 2000 recommendations, to be deployed at global, regional, national and local levels. The 'plan' is based on and exemplified the Sustainable Development ideology popularised by Brundtland (WCED, 1987), but was open to both Strong and Weak Sustainability interpretations. Of the 40 chapters, Chapter 17 - *Protection of the Oceans, all kinds of Seas, including Enclosed and Semi-enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of their Living Resources,* is especially pertinent to this thesis. This chapter advocates "integrated management and sustainable development of coastal and marine areas, including exclusive economic zones" (UN, 2002 17-1). Further to this all-encompassing directive, Chapter 17 is then divided into specific areas of 'concern'. Consequently, Sections B and D together provide a "basis for action" to deal with Marine Environmental Protection from oil spills. Marine oil pollution and 'critical natural capital' are the basis for action (Box Seven).

**Box Seven** **Agenda 21 – Basis for Action**

> **17.18** Degradation of the marine environment can result from a wide range of sources … maritime transport and dumping-at-sea activities contribute 10% each. The contaminants that pose the greatest threat to the main arena environment are … oil/hydrocarbons…
>
> **17.20** Marine pollution is also caused by shipping and sea-based activities. Approximately 600,000 tonnes of oil enter the oceans each year as a result of normal shipping operations, accidents and illegal discharges … (UN, 2002 17 4).
>
> **17.72** … other marine and coastal habitats … are among the most highly diverse, integrated and productive of the Earth's ecosystems. They often serve important ecological functions, … and are critical resources for food, energy, tourism … and such marine and coastal systems are under stress or are threatened from a variety of sources, both human and natural (UN, 2002 17-11).

The objectives, such as the preservation of rare or fragile ecosystems, are followed by a list of harmful 'activities' and the recommendations to nullify them (Box Eight) (UN, 2002). To conclude, the governments that adopted Agenda 21, and nearly 180 of the nations attending the Earth Summit did so, undertook to implement through national policies and procedures this 'outline for sustainable development' (MfE, 2006).

**Box Eight** **Agenda 21 – Several Recommendations**

**17.18 and 17.20**

- Apply preventative, precautionary and anticipatory approaches so as to avoid degradation of the marine environment … reduce the risk of long-term or irreversible adverse effects;
- Ensure prior assessment of activities … significant adverse impacts. Integrate protection of marine environment into relevant general environmental, social and economic development policies;
- Develop economic incentives … to apply clean technologies … consistent with 'polluter pays' and internalization of environmental costs (UN, 2002 17 4).

**17.72**

- Maintain or restore populations of marine species … sustainable yield …;
- Promote the development use of selective fishing gear and practices that minimize waste … by-catch of non-target species;
- Protect and restore endangered marine species;
- Preserve rare or fragile ecosystems, as well as habitats and other ecologically sensitive areas (UN, 2002 17-11).

## 4.2.6 Summary of International Treaties

While New Zealand has signed both of the above soft-law MEAs and has begun applying their principles and/or recommendations it is the hard-law treaties that New Zealand has ratified that the government is legally required to give effect to. Before progressing to our domestic maritime legislation it should be noted that some view ratification of hard-law treaties entails a loss of New Zealand sovereignty. However, ratification usually implies an expectation that the benefits outweigh the obligations (Caughley, 2001).

## 4.3 New Zealand's Coastal and Marine Legislation

The main reasons for much of New Zealand's domestic legislation regarding the marine environment are that firstly, it forms an essential part of New Zealanders' national identity. Not only do New Zealander's receive significant recreational and aesthetic benefits, but the marine environment provides many economic opportunities. Secondly, due to our geographical isolation, many of the more than 15,000 marine species found in New Zealand's Territorial Sea and Exclusive Economic Zone (EEZ) are endemic to our waters and therefore require a higher standard of protection (DOC, 2000; MfE, 2005).

New Zealand has three tiers of government: central, regional and territorial each with its own area of responsibility and jurisdiction, though these do overlap. The two primary administrative areas of relevance to the management of oil spills are the coastal marine area (CMA) and the EEZ. The CMA is the seabed and the water column between the line at mean high water at spring tides and the 12nm limit of the Territorial Sea. It is chiefly administered by regional councils in conjunction with the Minister of Conservation under the Resource Management Act 1991 (RMA). The CMA also includes the areas in which marine reserves can be established[5] and is a subset of the EEZ which extends to 200nm and for which a variety of agencies have various administrative responsibilities (Figure Six).

[5] Marine Reserves are developed as no-take areas for scientific purposes. They are created by the Governor General in Council on the recommendation of the Minister of Conservation under the Marine Reserves Act 1971.

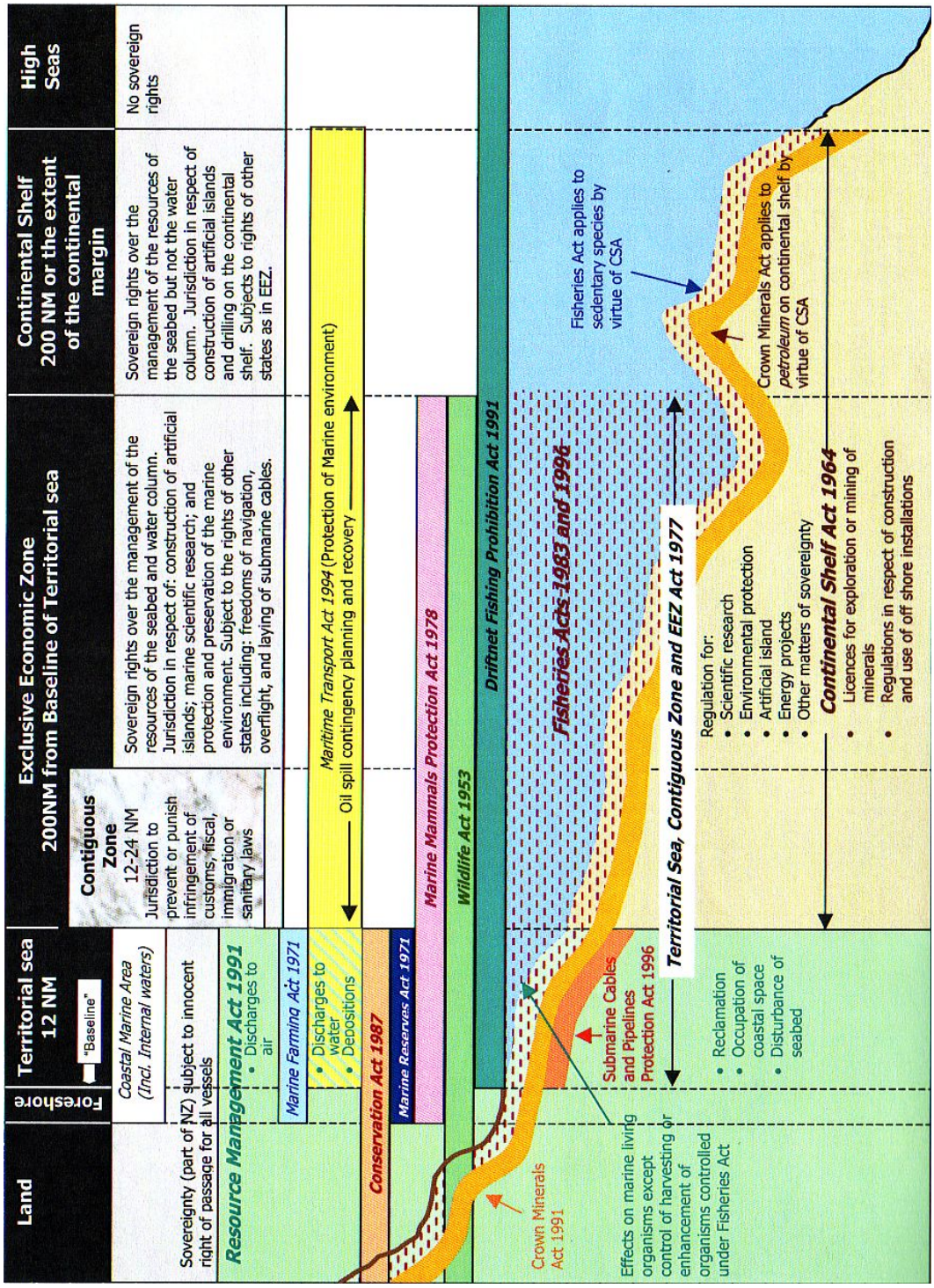


Figure Six: Schematic overview of jurisdictional boundaries of key statutes (MfE, 2002 17).

However, the Ministry of Transport and its agency the Maritime Safety Authority (MSA)[6] are responsible for shipping and oil spills in the EEZ except where primary administration lies with regional councils under the RMA. Accordingly,

[6] The Maritime Safety Authority changed its title to Maritime New Zealand in July 2005, as most of the information received from this organisation was collected while the organisation was the MSA this acronym will be continued throughout the thesis.

this review begins with the existing national legislative and policy framework and then summarizes the requirements of regional council and coastal plans and policies.

### 4.3.1 Resource Management Act 1991 (RMA)

The background to the RMA and its marine provisions are well traversed elsewhere. Memon *et al.* (1995 109) note that "… [this] new planning legislation is the product of two quite distinct and contradictory, socio-political forces, notably the New Right and the environmental movement … [which] signals a paradigmatic shift in planning ideology and perhaps practice". As a result the RMA blends free market ideals of minimal government interference with a focus on avoiding, remedying or mitigating affects of activities on the environment. This merging of policy objectives warranted a different approach to planning and as such "the new RMA adopted the principle of "effects-based" planning. Rules in plans were to be based not on activities, but on environmental effects" (Rennie, 2006 512). Some believe (New Right advocates) that "… the weight given to the biospheric dimension of the human environment … means that socioeconomic needs of … society are weakly inscribed in the RMA" (Memon *et al.* 1995 121). For others (environmentalists) this shift to "sustainable management" is the purpose of the RMA (Box Nine), is necessary for ecological sustainability and arguably represents the Sustainability Imperative (Bosselmann *et al.* 2002: Randerson, 1997).

**Box Nine** **Sections of the RMA of significance to this Thesis**

s.5(2) In this Act, "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonable foreseeable needs of future generations; and

(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Additionally, Part II of the RMA contains s.6 – Matters of National Importance and s.7- Other Matters, both reinforce the purposes and principles of the Act. These sections state that; In achieving the purposes of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources shall …

s.6 … recognise and provide for the following matters of national importance:

(a) The preservation of the natural character of the coastal environment (including the coastal marine area) …

(b) The protection of outstanding natural features and landscapes from in-appropriate … use

(c) The protection of areas of … significant habitats of indigenous [flora] and fauna …

(d) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu (sacred sites) and other taonga (treasures).

s.7 … have particular regard to:

(c) The maintenance and enhancement of amenity values

(d) Intrinsic values of ecosystems

(e) Recognition and protection of the heritage value of sites… places or areas …

"The functions, powers and duties of the RMA, relegated to central and local government are structured to provide a cascading hierarchy where the lower levels of plans must not be inconsistent with higher level policy statements and plans" (Rennie, 2006 516). The highest of these policies is the New Zealand Coastal

Policy Statement (NZCPS) issued in 1994. As an instrument of the RMA (s.57), the NZCPS's preparation and recommendations fall to the Minister of Conservation. The objective of be NZCPS (Policy or Statement) is to promote the purpose of the RMA in relation to New Zealand's coastal environment and it provides integrated guidance across the line of MHWS and between adjacent authorities. The NZCPS policy statements most directly connected to oil spills (Box Ten) relate to preservation of natural character, controlling development and discharges, and identifying when and where activities or their effects must be treated as of such national significance that permission for them to occur can only be given by the Minister of Conservation (called Restricted Coastal Activities (RCAs)). Also decisions under the RMA, except those of the Minister of Conservation, may be appealed to a specialist Environment Court.

**Box Ten** **NZCPS policy statements most applicable to the research**

Chapter 1: Preservation of the natural character
- National priority to preserve natural character
- Protect features which are essential or important characteristics of the coast … [significant conservation value]

Chapter 3: Activities involving … development … of the coastal environment
- Identify areas important to the region/district and provide special protection
- Avoid adverse effects as far as practicable, and where not practicable mitigate or remedy
- Precautionary approach must be used …

Chapter 5: The matters to be included in Regional Coastal Plans
- No discharge may give rise to any significant adverse effect …
- Reduce contamination caused by trade wastes

Schedule 1: The circumstances in which activities that have a significant or irreversible adverse effect on the CMA will be made "Restricted Coastal Activities" (RCA)
- Petroleum/Chemical Structures
- Depositing substances
- Discharge …

(DOC, 2004)

The Minister of Conservation also approves all 'regional coastal plans' (RCP). It is of interest to note here, that initially there was a suggestion that regional councils include sites of 'significant conservation value' in their plans although it has now been decided that they do not have to. This is particularly relevant as marine reserves ontologically could be expected to be automatically areas of 'significant conservation value' and consequently certain activities, such as

shipping, in and possibly near such a site might be considered a RCA. If this were the case then the decision, on what activities to allow in and/or near a marine reserve, would arguably be the Minister of Conservation's[7]. The implications of this will be considered in Chapter Six.

The original RMA however, did not expressly curtail the discharging, dumping or incinerating of waste in the CMA. Thus, a 1994 amendment to the RMA (s.15B) did clearly prohibit these activities however it was not until the 1997 amendment to the RMA that devolved the power to regional councils for control. The Councils enforce s.15B (Box Eleven) via the coastal planning and permitting regime. The amendment essentially prohibited discharges unless allowed by a rule in the RCP or a coastal permit was obtained and made the actions subject to s.5 of the Act (Bosselmann *et al.* 2002).

**Box Eleven** **Discharges of harmful substances from ships or off shore installations**

s.15B. (1) No person may, in the coastal marine area, discharge a harmful substance or contaminant, from a ship or offshore installation into water … unless-

(a)The discharge is permitted or controlled by regulations made under this Act, a rule in a regional coastal plan, proposed regional coastal plan, regional plan, proposed regional plan, or a resource consent; or …

(3) Where regulations are made under this Act permitting or controlling a discharge to which subsections (1) … apply, no rule can be included in a regional coastal plan, proposed regional coastal plan, regional plan, or proposed regional plan, or a resource consent granted relating to that discharge unless the regulations provide otherwise; and regulations may be made prohibiting the making of rules or the granting of resource consents for discharges.

### 4.3.1a Evaluation of RMA

The RMA officially integrates environmental management to ensure the sustainability of New Zealand's resources not only for the use and enjoyment of the present generation but also future generations. Although the Act does not specifically mention the Precautionary Principle it is implied through the 'avoiding, remedying or mitigation' of any adverse effects from any proposed

[7] James and Rennie (2003) describe a similar approach to the organisation of cruise ship management in Fiordland. This is based on a successful argument that coastal permits might be required for shipping, but they suggest that this might not be correct and was not tested in the courts.

activity on the environment (Rennie, 2006 514). Hence, both 'sustainable management' (as the Sustainable Imperative) and the 'precautionary principle' are fundamental approaches that underpin New Zealand's management of the marine environment through the RMA.

A provision of my methodology was to analyse the national legislation as to whether it was proactive or reactive. My assessment of the RMA is that it is both. The basis for this is that the motivation for the Act could be considered reactive due to the persuasion of internal and external forces, such as New Right activists, UN treaties or WCED. This is reinforced by the addition of s.15B through the 1994 amendment. However, the actual and implicit purpose and principles are proactive. An example of this is the effects on the bio-physical environment, when assessed are often given greater weight than other socio-economic considerations. Specifically in the marine environment unless permission has been granted by either a resource consent or a rule in a plan, or the substance discharged is harmless, then it can not be discharged. In other words the default assumption is prohibitive.

Although the main 'protectionist' jurisprudence, with regard to New Zealand's marine environs, is the RMA the Maritime Transport Act 1994 and various other 'purpose explicit' legislation also have responsibilities within in the Territorial Sea and beyond.

### 4.3.2 Maritime Transport Act 1994 (MTA)

The MTA (Act) came into effect over several years and superseded at least two other maritime statutes, one being the Marine Pollution Act 1974 (MSA, 1995). The 1994 Act was a result of the recognition given to the coastal marine environment by the RMA via s.6 (a) as formerly described. The MTA substantially improved upon the previous maritime safety standards and procedures and the regulations governing the protection of the oceanic domain. Furthermore the MTA places a greater 'duty of care' onto the shipping industry, both towards its people and the environment (David *et al.* 1997). The Act maintains the MSA (Authority) as the primary agency for implementing the MTA.

The statutory framework of the Act basically divides responsibility into three main areas being; 'Maritime Rules', 'Marine Protection Rules' and 'Emergency Maritime and Emergency Protection Rules' (MSA, 1996). All three divisions stem from and incorporate the many international conventions and protocols that New Zealand has either signed, ratified or consider appropriate to employ with regards to the marine environment (David *et al.* 1997; Wallace, 1996). An example of this is the incorporation of four of the six annexes of MARPOL 73/78 into the Marine Protection Rules which is seen by the MSA as further safeguarding the sea from most types of ship pollution. The Maritime Rules, s. 34, 36, 39, 40 of the Act, govern the technical, procedural and documentary standards for the navigation and operation of ships. Next the Marine Protection Rules, covered under s. 386 to 393, detail the protection of the marine environment. Apart from the overall rules, certain areas of concern are specified. These include the dumping and incineration of waste; controls on toxic substance; and the Marine Oil Spill Response Strategy and Contingency Plans. The Act actualizes a tier system to respond to marine oil spills and the responsibility for clean-up (Box Twelve).

**Box Twelve** **New Zealand's Four Tier Marine Oil Spill Planning and Response Strategy (after MSA, 1995 27)**

**Tier 1:** The [oil] industry, including ships, offshore installations and oil transfer facilities … are required to have an oil spill contingency plan and to carry out the initial response to a spill (s. 287).

**Tier 2:** The relevant regional or unitary council … are required to develop, approved by the MSA, oil spill contingency plans and respond to spills inside the territorial sea (s. 288 – 293, 299, 300).

**Tier 3:** Maritime Safety Authority is responsible for developing a National Marine Oil Spill Contingency Plan. This plan also provides an information base to be used in developing plans and maintaining an effective response capability at all levels (s. 296 – 298). MSA also manage spills … outside the territorial sea and any spills that regional councils are unable to handle on their own (s. 296 – 298).

**Tier 4:** If the spill is beyond the resources of New Zealand, The MSA coordinates the international assistance (s. 301 – 304).

Although the tier system points out who is responsible in each area, it does not quantify the size of the spill, which would shift the authority (for the clean-up) from one category to another. The reason for this is that responsibility depends on the amount and type of oil, the location of the spill, and the answerable party's

ability and/or effectiveness to take action. Hence the MSA, who have national control and responsibility for oil spills in the marine environment, will often be 'called in' to a Tier One or Two spill situation to advise or physically assist (equipment and/or personnel) with the clean-up.

Lastly, the MSA is also endowed with the authority to prosecute the offender, of any Tier Three or Four oil spill, for any damage and costs incurred in the clean-up. While for Tier Two oil spills, the regional council has prosecutorial power. This authority, to both the regional council and MSA, is provided for by way of the CLC (s. 342 – 369). Supplementary to this, if the oil spill perpetrator is unidentifiable then the CLC and Fund Convention (if necessary) will provide restitution. The MEAs that have contributed to this portion of the Act include the London Convention, OPRC and the SPREP Convention (Randerson, 1997; MSA, 1995). The third division is the Emergency Maritime and Emergency Protection Rules (s. 37, 38, 391, 447, 449, 450). Through these sections the Director of the MSA is authorized to apply emergency rules, effective for a maximum of 120 days, to situations that may cause death or serious injury and/or damage the marine environment or property.

Apart from these three main partitions of the Act, the Authority can impose fees and charges to the users of their services. This can include a 'marine safety charge' and the Oil Pollution Levy (OPL) for ships operating in New Zealand waters and entering any port. The marine safety charge funds such things as navigational aids and distress and safety radio services and is regulated under section 191 and 445 of the MTA (MSA, 1995). The OPL funds the Oil Pollution Fund (OPF) which supports the marine 'oil spill response team' and equipment to respond to oil spills in the marine environment and is the internalization of the economic costs of pollution to the shipping industry (MNZ, 2006).

#### 4.3.2a Evaluation of MTA

Overall the 1994 Maritime Transport Act is a reactive piece of legislation. This conclusion was reached because most, if not all, of the' Rules' in the Act are based on the requirements of the international treaties, such as the London Convention, MARPOL 73/78 and the CLC, that New Zealand has ratified. The

MTA was a combination of other statutes that consolidated most maritime activity, especially commercial shipping and marine pollution, (though not fisheries) into one concise act and it also recognises the purposes and principles of the RMA (s.6 (a)). Having said this, it could be stated that many of the rules and procedures in the Act are proactive. This is because New Zealand has sought to avoid a major oil spill, on the scale of the Exxon Valdez or the Torrey Canyon, and therefore a core function of the Act is to prevent oil spills of all sizes in the marine environment.

### 4.3.3 Marine Reserves Act 1971 (MRA)

The Department of Conservation (DOC or Department) administers several statutes, or parts thereof, that relate to the management and protection of the marine environment. These include the Wildlife Act 1953, the Marine Mammals Protection Act 1978 and aspects of the coastal provisions of the RMA. However, only one is directly related to this research topic, which is the Marine Reserves Act 1971 (MRA) as the major case study is within the boundary of a marine reserve. The present MRA is 35 years old and its primary purpose was and still is the protection of marine areas for scientific study in our territorial waters. By 2002 however, the Conservation Minister argued that "[the Act] served New Zealand well in its day, but is not able to meet today's marine protection needs" (DOC, 2002 1). According to the Department, over the years community values have changed in regard to marine reserves from being 'not in my backyard' (due to the 'no fishing' rule) to one of "sheer delight of viewing unspoilt underwater worlds teeming with fish and plant life" (DOC, 2002 1). Consequently after two years of consultation the Marine Reserves Bill was introduced to Parliament in 2002. Thus, if the Bill is passed into law, the amended Act will retain certain fundamental aspects of the original statute, for instance 'no harm' public access to the reserve, but also include new principles like the conserving of marine biodiversity. Other amendments, to the Act, would include the acknowledgement of the Crown's obligations to Maori when establishing and administering marine reserves and the creation of reserves in the EEZ, as currently they can only be established within the Territorial Sea (DOC, 2002; 2005c).

#### 4.3.3a Evaluation of MRA

From its instigation the MRA would be considered to be proactive legislation. This is because at the beginning when the marine areas were secured for scientific research it was so that 'we' could learn more about the marine environment if it was protected. The outcome however, was the protection offered ecosystems within a marine reserve ensured that it significantly constrained potential economic use such as fishing. This makes the establishment of marine reserves a source of conflict within a community. Nevertheless as time moved on, the marine reserves become more than just areas of scientific study or areas that people could not fish anymore they became 'sanctuaries' for all manner of marine life that requires protection. The marine reserves that are created therefore can be argued to be examples of "critical natural capital" as Turner *et al.* (1994 56) explain in Chapter Two. Consequently the MRA needed to be upgraded to reflect this shift in society values and once amended would continue to be proactive legislation.

### 4.3.4 Regional Council Responsibilities

The functions of regional councils under the RMA are specified in s.30. Basically, with regards to the coastal zone, the council has the authority to manage and control the effects of activities on the coastal marine area (in conjunction with the Minister of Conservation). To accomplish these functions, regional councils develop and enforce RCPs that adhere to s.64 of the RMA and they can not be inconsistent with the New Zealand Coastal Policy Statement (NZCPS) (MfE, 1999). Regional councils under the Local Government Act 2002 are responsible for navigation and safety (of vessels) in harbours. Another function of the Councils' concerns marine pollution, each regional council is required through the Resource Management (Marine Protection) Regulations 1998 of the RMA to produce and implement a regional marine spill contingency plan for their Territorial Sea. The plans need to meet the requirements set out in the Marine Protection Rule and are approved and reviewed by the MSA (MSA, 1996). As the MSA is also required to produce a National Marine Oil Spill Contingency Plan this demonstrates legislative integrated coastal management.

#### 4.3.4a Evaluation of Regional Council Responsibilities

It is not difficult to identify whether a regional council's coastal plans are proactive because they are the next step down from the NZCPS that advocates the precautionary approach, the preservation of the natural character and mitigating adverse effects to the coast. The 1994 amendment of the RMA s.15B, which prohibits discharge of harmful substances from ships and off-shore platforms, unless the regional council allows it through their plans or permits, further enhances the regional council's ability to protect the marine environment. Another requirement under the RMA, through the guidance of the MSA, is that all regional councils must have an 'Oil Spill Response Plan' (OSRP). These plans if activated are 'reactionary', but by developing and improving them, training personnel in oil spill response and upgrading and/or advancing the technology required to clean-up a spill, the OSRP could be considered a proactive process.

## 4.4 Chapter Summary

New Zealand, as a member of the global community, accepted that to achieve long-term environmental viability legal and institutional changes needed to occur. Consequently, New Zealand has signed and/or ratified many of the hard and soft-law MEAs advanced by the United Nations and its agencies. Of the hard-law MEAs that affect our marine environment, the recommendations from all three UNCLOS treaties, the London Convention, OILPOL (and now MARPOL 73/78 and OPRC) have had considerable inclusion into our domestic legislation and policies. This can be seen through the statutes of the RMA, not only as implied principles such as the precautionary approach, but with specific referencing, such as MARPOL 73/78 under the Marine Protection Rules of the MTA. Further to this, the UN has internalized the cost of oil pollution back to the oil industry through the CLC and Fund Convention agreements which New Zealand signed. This internalization has been continued with the MSA levying the shipping industry to fund the Oil Pollution Fund.

The soft-law MEAs have also influenced national policies, an example is the 'integrated management of coastal and marine areas' suggested by the Brundtland

Report and accredited in Agenda 21. As a first step to this 'integration' all regional coastal plans must be consistent with and give effect to the national coastal policy, the NZCPS.

The national statutes and policies, pertinent to the marine environment and oil spills, were also analysed as to whether they were categorised as proactive or reactive. Except for the MTA, though it contained elements such as the Marine Protection Rules that would be deemed proactive was viewed as a reactionary piece of legislation, all the others were generally proactive. This suggests, especially over the last 15 years, that New Zealand is determined to, not only fulfil its international obligations, but to embrace the concepts of the Sustainability Imperative that will hopefully ensure a sustainable marine environment in the future.

Finally, DOC, the MSA and the regional councils regulate the 'use of' and 'protect' the CMA through the requirements of the RMA, Maritime Transport Act and other statues that are applicable to this research. The MSA, in implementing the MTA, are the primary agency that governs most maritime shipping activity and marine pollution prevention and clean-up in New Zealand waters, but the role of the regional council is also very significant, particularly to achieve integration of the CMA.

# Chapter Five: The Case Studies

The purpose of this chapter is to examine two case studies. The context will be briefly outlined by describing how and what types of oil pollution can enter the marine environment. Next the major case study of the oil spill at the Poor Knights Islands Marine Reserve will be explored including the clean-up, pursuant court case and the follow-up action taken. Finally, a desk review of the oil spill, clean-up and outcome of the Jody F Millennium incident will be considered.

## 5.1 Introduction

Major (>700 tonnes) oil spills, due to their immediate and often devastating effects are very newsworthy. As previously mentioned the 1967 oil spill from the *Torrey Canyon* was the first major tanker spill, but the one that possibly captured public attention the most was the *Exxon Valdez* incident in 1989. Although this was a relatively small major oil spill (37,000 tonnes), in comparison to others (largest: 286,000 tonnes), it occurred along part of the Alaskan coastline which had previously been unspoilt. This spill, caused by one small error, killed an estimated one million seabirds, 4000 sea otters, an unknown quantity of salmon and herrings, 500 seals and 20 whales. It also blackened 2080 kms of coastline and ensured the economic decline of the coastal community of Cordova that relied heavily on fisheries and tourism (Stow, 2006; The New Zealand Herald, 2004). Far less newsworthy are the oil spillages that occur from routine operations and non-point[8] sources, both of which contribute nearly 20 times the amount of oil pollution into the marine environment than the major oil spills per year. To put this into perspective it means that out of the estimated 2.365 million tonnes of oil that enter the oceans on an annual basis only 121,000 tonnes are due to tanker accidents (Clark, 1997). Nevertheless, it is the major oil spills that appear to have the most negative environmental, economic and social consequences. There are three reasons for this; firstly, the wildlife deaths that can be directly attributed to large spills; secondly, there is little acknowledgement of non-point source input

[8] A 'non-point' source is any additive that enters, in this case, the marine environment from diverse points of origin. Examples include urban storm water run-off which usually contains amounts of oil and other chemicals washed from the roads and industrial sites or atmospheric fall-out such as acid rain. A 'point' source therefore, is a readily identifiable place of discharge such as a sewerage or radioactive waste outlet (Berry *et al.* 2005; Parker, 1997).

and operational oil spillages outside the industry and governmental agencies; and lastly the oceans have been the primary dumping ground for many of human-kind's wastes for decades (Parker, 1997). This reflects both the seeming infinite capacity of the oceans to cope with pollutants and its relative low cost for the polluter. However, as David *et al.* (1997 328) note;

> Although the oceans can purify and recycle pollutants, their capacity to do so has limits. The sheer volume of discharges can overload natural systems, and natural processes cannot readily degrade all the complex chemicals that have been created by modern industry.

Accordingly much of the waste that is now present in the oceans of the world may not be assimilated at a rate able to match that of the pollution discharges into it. Despite the potential damage to individual flora and fauna, not all human wastes that are introduced to the marine environment cause 'significant' detrimental effects. Sewerage is one that can be purified and recycled by the sea, though it depends on the amount of sewerage input and/or how often, and/or if there are high concentrations of other components such as metals, oils and grease in the organic matter (Clark, 1997).

The oceans can also reprocess some types and quantities of oil. Various types of oil react differently when in or on seawater. For example 250,000 tonnes of oil yearly seep into the oceans from natural reservoirs. This seepage, which has not been chemically altered by humans, is more easily assimilated into the oceanic habitats and organisms that surround the leak than chemically altered oil (Stow, 2006). The chemical characteristics of oil are defined by the proportion of hydro-carbons to the other constituents like sulphur, vanadium and iron. This variance of hydrocarbon to other elements often depends on the oil's country of origin and/or whether the oil has been modified. Additional determinants can include the oil's viscosity, emulsibility, and volatility (MSA, 2005). Thus, many grades of oil exist, but for the purposes of this research, the two general categories of persistent and non-persistent will be considered. Persistent oils include crude oil, diesel fuel and refined products and as the name suggests the oil persists in the marine environment as they are not easily degraded. Non-persistent oils are more easily dispersed within the water column or evaporated (Ross, 1973). Therefore,

the outcome to an oil spill in the marine environment can be affected by several elements, such as the amount and type of oil, the weather conditions at the time and the nature and geography of the site (Clark, 1997). Oil spills, of varying intensities, generate such harmful effects because most of them occur within the 12 nm limit. Not only does this generally mean that the oil will make landfall, thereby worsening the ecological damage and extending the clean-up efforts, but coastal waters are invariably inhabited by many sensitive aquatic organisms. Moreover, within the areas where there is mixing of fresh and salt water there is generally a higher production of nutrients. Consequently, the territorial waters of maritime nations are commonly rich feeding grounds for a multitude of marine and bird species as well as being the nurseries of future fishing stock (Connell, 1993; Doak, 2002).

New Zealand is no exception to this rule. Though not all of the approximately 15,000 marine species that are currently found in our waters reside either specifically or continually within the 12nm limit, New Zealand does have a rich and diverse coastal seascape (DOC, 2005a). Firstly, the majority of New Zealanders live and work near the coast. Secondly, many of us enjoy a recreational and/or aesthetic relationship with the coastal area, and finally the CMA could be considered a crucial aspect of New Zealand's trade and industry. The range of economic activity generated in the CMA comprises all manner of industries from shellfish harvesting to tourism and adventure sports, though possibly the most essential is maritime transport. Being geographically isolated, we rely heavily on the shipping industry to compete in the world markets (MfE, 2004). By volume, 90% of New Zealand's exports and imports are transported by sea and on average 3,300 trading vessels visit New Zealand on an annual basis. Most sail via the eastern shipping lanes of the North Island en-route to and from the ports of Whangarei, Auckland, Tauranga or southwards (Kirkpatrick, 1999; Statistics New Zealand, 2003). Additionally the Marsden Point Oil Refinery, New Zealand's only oil refinery, is located at the entrance to the Whangarei Harbour. Of the four oil tanker classes[9], the refinery can accept the Panama, Africa and Suez size tankers with approximately 350 Afrimax or Suez tankers

[9] Tanker classes: Panama - 60,000 Dead Weight Tonnage (DWT)
Africa - 110,000 DWT
Suez - 150,000 DWT
Super - 500,000 DWT (Wetendorf, 2004).

arriving per year (Wetendorf, 2004). Further to these larger tankers, which carry crude oil, the refinery also receives between three to six product tankers per month. These product tankers (25,000 tonne capacity) deliver either already refined oil products or oil that is between the crude and refined stage. Finally, the refinery also loads the coastal tankers (25,000 tonne capacity) that deliver two-thirds of the refineries product to other New Zealand ports for distribution (Wetendorf, 2004). Doak (2002 1) pointed out that "the risk of a major oil spill on the New Zealand coast has never been greater" especially from an oil tanker. Despite such expectations, the research on the literature shows that an oil spill is more likely to be from other types of commercial vessels than from tankers as was the case in the two oil spills that are detailed below.

## 5.2 Case Study – Poor Knights Islands Marine Reserve

In Chapter Three the rationale for a case study methodological approach was elucidated, as was the choice of the Poor Knights Islands Marine Reserve (PKIMR) oil spill as the major case study. In presenting the results of the research I firstly provide a contextual background of the case study. This consists of a summary of both the Maori and European habitation of the Islands and how the surrounding sea was designated as a marine reserve. Then the oil spill, the identification and prosecution of the perpetrator and the internationally recognized precedence of a 'shipping ban' placed between the coast and the PKIMR are discussed.

### 5.2.1 Maori History of the Poor Knights Islands

One of Northland's key industries is tourism and arguably a 'jewel in the crown' is the Poor Knights Islands Marine Reserve. These islands are the remnants of four million-year-old volcanoes and are situated 24 km north-east of Whangarei. The group consists of two main islands (Tawhiti Rahi the northern and largest, Aorangi the southern island) and several smaller islets and rock outcrops (Doak, 2004). Both of the larger islands were inhabited by the Ngati Wai tribe or sub-tribes for many generations until the early 19th-century (circa 1808). Then the Hikutu, a tribe from the mainland, raided the islands for slaves and pigs. They took some slaves, but killed most of the other inhabitants. Chief Te Tatau of

Ngati Wai and his warriors, who had been away fighting elsewhere, returned to the islands and upon discovering the massacre and enslavement of many of the tribe declared the islands as tapu (sacred) and left to resettle in the Bay of Islands (DOC, 2003).

### 5.2.2. How the Poor Knight Islands became a Marine Reserve

Since the departure of the Ngati Wai, the government assumed ownership and sold the islands to a private citizen. Forty-three years later, mid-eighteen hundreds, the government brought or took the islands back, and they have been under the Crown's control ever since. First, the islands were a lighthouse reserve from 1883 to 1923, then they became a scenic reserve and by 1975 the islands were a fauna and flora reserve. Today they are identified as a nature reserve, under the Reserves Act 1977, with no landing access above the waterline. In 1981, the waters surrounding the islands (24 $km^2$) were established as a marine reserve. This was achieved with the full endorsement of the Ngati Wai people to help protect the significant tapu of the islands (DOC, 2003; Parata, 2004). Marine reserves are effectively New Zealand's oceanic national parks. It is easy to see why the marine environment of the Poor Knights Islands was established as a marine reserve. The uniqueness of the area comes from the lack of human impact for nearly a century (though the sheltered waters and abundant fish life made the area a popular fishing location, especially for recreational fishers), the proximity to the continental shelf and the influence of sub-tropical currents which have created habitats for a diverse abundance of sea creatures (Doak, 2002). These include sub-tropical and temperate species from sponges and nudibranchs to pelagic and reef fish (Plate One).

Plate One: An example of the marine species - Poor Knights Islands (Skipworth, 2006).

The proliferation of underwater caves, tunnels and archways, within water of exceptional clarity meant the PKIMR has become an internationally famous dive spot. This was partly due to the endorsement of Jacques Cousteau, who rated the marine reserve as 'one of the world's top 10 dive areas' (NZ Travelplanner, 2004). The other natural wonder is Rikoriko Cave the world's largest sea cave, well-known for the live concerts held there, that also attract many non-diving tourists to the reserve (Doak, 2002; Media Resources, 2005). While it was relatively easy to justify establishing a marine reserve in 1981, there was controversy in 1998, when a ban on recreational fishing at the reserve was secured to protect the fish life (Seafriends, 2006). Nonetheless, even with the status as a marine reserve and the protection this entails, coastal and oceanic conservation areas cannot be fenced off and therefore they cannot be entirely shielded from all harmful human impacts (DOC, 2005b).

### 5.2.3 Oil Spill at the Poor Knights Islands

The shipping traffic off the Northland coast is high and will probably only intensify. The New Zealand Statistics Department's yearbooks (1990; 2000) show that nationwide between the years of 1989 to 1999 the gross tonnes unloaded increased by over 5.5 million and the gross loaded tonnage virtually doubled to nearly 20 million tonnes. A third of the approximately 80% of cargo loaded and unloaded at North Island seaports is handled by the ports of Whangarei and Auckland. Over the same period, the import of crude oil increased by 40% (Statistics Department, 1990; 2000). Because of this increase of vessel traffic, the MSA suggested a Voluntary Vessel Routeing Code (VVRC) in 1994 for all oil tankers and hazard/bulk liquid carriers passing the Northland coast. These vessels were requested to sail five nautical miles off the coastline, thereby passing east of the Poor Knights Islands and High Peaks Rock (Figure Seven) (MSA, 2001).

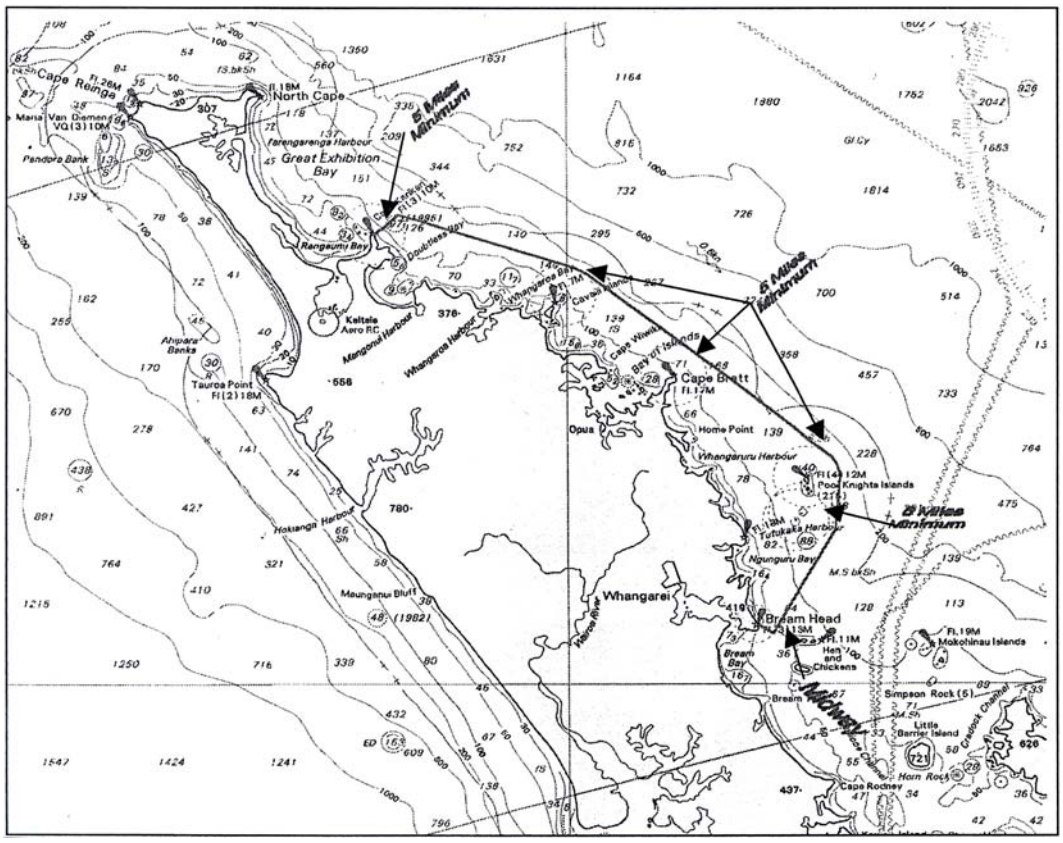

Figure Seven: Area avoided if VVRC is followed (MSA, 2001 17).

Even though this routeing code was voluntary and only asked of the liquid bulk transporters, several other shipping companies followed the new guidelines

(Wetendorf, 2004). Nevertheless, as it was permissible, a number of trading vessels continued to pass between the coast and the islands. Hence, in the early afternoon of the 2nd of December 1999 when several commercial ships were navigating the channel one of them apparently emptied its bilge water into the sea. This discharge, of several tonnes of oil and other contaminants, caused an oil slick that quickly spread over a wide area (1.5km by 6km) in a north-easterly line that paralleled the shipping lane (NRC, 1999).

The spill was reported to the Northland Regional Council at around 4 pm that day by a charter fishing vessel. The Council immediately initiated their Oil Spill Contingency Plan (OSCP) including notifying the MSA National Oil Spill Centre. At the time of the PKIMR oil spill, the manager of the MSA National Oil Spill Centre was Mr Niblock[10]. Accordingly, his duties were to "keep an eye on and assist the Regional Council with advice" (Niblock, 2004 1). So, even though Mr Niblock was not in the 'thick of things' he was able to provide an overview of the oil spill and follow-up action. Niblock (2004 1) stated that the first step (under the OSCP), was to "put aerial surveillance up … to assess the size of the spill and the weather conditions [which] were pushing it out towards the Poor Knights … [causing] a problem as they didn't have a lot of time before it got there. But [the plane] also identified a number of ships in the area, one of which proved later on to be the one that spilled the oil". The other immediate action taken was to collect samples of the oil slick for identification purposes (MSA, 1999).

The spotter plane observed that the spill, due to the 10 knot south-westerly wind at the time, was moving directly towards the islands. It was soon realised by the 'on-scene' response team[11] that little could be done before nightfall especially as the use of a dispersant, which is sometimes more harmful than the oil, was not an option with the slick heading towards the reserve. The assessment was that most of the slick would just pass through the islands with minimal damage and this is what ensued. By the following morning there were extensive patches of oil on either side of the islands, which with the aid of the south-westerly, drifted out past

[10] In 2004, Mr Niblock was employed by the Northland Regional Council, as the manager of the Council's Oil Spill Response Team and Whangarei Port Harbour Master. Mr Niblock also, at that time, was the Maritime Safety Authority's National On-Scene Commander for oil spills (Niblock, 2004).

[11] 'On-scene' on the 2nd of December 1999, was the Regional Council's 'oil spill response' personnel.

the 12nm limit and eventually dispersed. Nevertheless, though the majority of the slick appeared to bypass the islands the remainder still had a destructive impact. Parts of the shoreline and many of the smaller sea caves and tunnels were soiled by the oil, but the two that were damaged the most 'ecologically' were Jan's Tunnel and Rikoriko cave. The reason for this was that the walls, especially of the cave, provide a habitat above and below the inter-tidal zone for many rare species of flora (MSA, 1999; Niblock, 2004).

Due to the rareness of the plant life various strategies were used to collect the oil. Firstly, to recover as much of the still floating oil, buoyant absorbent booms and wildlife nets were used. Then the walls were sprayed with low pressure sea water to remove oil back into the sea for collection. Lastly, to minimize further damage to the flora and fauna on the rocks they were patted down with absorbent sponges. DOC staff also searched the islands for any affected wildlife and discovered 12 oil soaked dead seabirds (MSA, 1999; NRC, 1999). Niblock (2004, 3) described the effect of the oil as "a pretty horrible sight [and that] it looked like chocolate mousse [as it was] oil from the bilge of a ship mixed with water and all sorts of other stuff" (Plate Two).

Plate Two: Oil slick heading onto the Poor Knights Islands Marine Reserve (NRC, 1999).

Plate Three: Cleaning-up the oil spill at the reserve on the Poor Knights Islands Marine Reserve (NRC, 1999).

As the oil spill occurred in the CMA it was a Tier 2 spill; this means the overall organisation for the clean-up was the responsibility of the NRC, though there was considerable support from DOC, Ngati Wai and environmentally aware local people such as author and marine photographer Wade Doak. The MSA (as the National Oil Spill Response agency) was also 'called upon' for advice and assistance with finding the oil spiller. Niblock (2004 3) stated that "a number of interested parties [About 15, trained oil spill response personnel from NRC and DOC and volunteers such as Wade Doak] … met [in Rikoriko cave] and decided [in accordance with NRC's Oil Spill Contingency Plan] exactly how far the clean-up was going to go and once this was agreed upon, they then worked towards that and stopped when the standard was reached". The reason given by Niblock (2004 4) for removing only a particular amount of the oil-chemical concoction was because;

> We [MSA and NRC] have learnt our lessons about cleaning-up oil spills from our own experiences … and other places … an example is the *Exxon Valdez* spill where they worked to remediate the oil spill and they actually sterilised beaches … [which] haven't come back to their pre-spill state.

Accordingly the clean-up, after several days, was considered to have been successful. This was based on past experience that sometimes too much cleaning-up can have a worse effect on the flora and fauna than leaving some oil traces. Thus, it was left to nature to finalise the process and return itself to pre-spill form. Also during this clean-up it was realised, from evidence on the walls of Rikoriko cave, that there had been previous un-notified oil spill events that the environment seemed to have assimilated, possibly due to the spills being smaller. Although no specific monitoring on the long-term effects of the 1999 oil spill have been made by NRC or DOC, when either agency has been on the islands for other reasons, neither have observed any enduring effects (Niblock, 2004).

Further to the clean-up, the NRC had the responsibility to identify and prosecute the offenders of the oil spill. As a member of the SPREP, New Zealand has a Memorandum of Understanding (MoU) with Australia. This MoU is basically a reciprocal arrangement between the two countries's that should either country require assistance with an oil spill and/or follow-on action, the other will give it. Consequently when New Zealand's MSA shortened the suspect list of vessels that may have caused the spill, and the next port of call for one of the vessels was Sydney, the Australian MSA was asked to assist. With the help of the Australian MSA the vessel was duly identified as the merchant vessel (MV) Rotoma. This was determined using the following investigative techniques (Box Thirteen).

**Box Thirteen Investigation tools employed to identify the Oil spiller**

- Identification of the vessels in the region from the aerial photographs taken on the 2nd December 1999;
- Data obtained from all North Island ports regarding the arrival and departure times of commercial vessels for the 1st and 2nd December;
- The New Zealand Customs Vessel – Hawk IV, while executing routine surveillance around the PKIMR, tracked and spoke to the MV Rotoma at about the time the oil spill occurred;
- A chemical match of the oil slick samples and samples obtained from the MV Rotoma's engine room, upon her arrival in Australia; and
- Information from the MV Rotoma's engine room and oil transfer log books (Australian MSA (AMSA), 1999; MSA, 1999).

The MV Rotoma was travelling from Tauranga en-route to Sydney and went through the channel, as they were known to do regularly (New Zealand Customs, 1999). The ship is a roll-on roll-off container carrier that between 1 pm and 2.30 pm on the 2nd of December 1999 pumped overboard, through the oil-water separator, $5m^3$ of bilge water (contaminated with heavy fuel oil (HFO), light oil and other chemicals) and $2m^3$ of purifier slop (PS) tank contents. The oil-water separator only works if the oil can float to the top of the water column and in this case it had not done so, as a result the discharged bilge water significantly exceeded the oil to water ratio of 15 parts per million (ppm) as required under MARPOL 73/78 (AMSA, 1999). This and the following dumped contents of the PS tank, which contained detergent and other chemicals, ensured that the slick was of the 'persistent' variety. Upon the confirmation of the offender the NRC then initiated prosecution proceedings.

## 5.2.4 Prosecution Proceedings

The next stage towards prosecution was to interview the Master, crew and owners of the vessel. Consequently a meeting was held on the MV Rotoma on the 19th of December 1999, upon her return to Auckland. Present were representatives of the MSA and NRC and agents for the Australia Direct New Zealand Direct Line (ANZDL) the owner, and Anglo Eastern Ship Management Ltd the operator. Also in attendance were the Master (Captain) and Chief and Duty Engineers of

the vessel. At the end of the meeting and with the finalization of the investigation the MSA reached the subsequent conclusions (Box Fourteen):

**Box Fourteen** **Conclusions of Investigation of Oil spiller**

- The vessel had a leaking stern gland [where the propeller goes through the hull of the ship]. Seawater was leaking into the engine room at the rate of approximately 7.4 $m^3$ per hour.
- With such a constant leak into the engine room the bilge water, after being contaminated with oil and other chemical waste, was then pumped out into the sea through the oil-water separator every three hours. This practice had become routine.
- There were standing orders in place regarding the management of engine room oily waste, but staff showed a marked lack of knowledge of these standing orders and no staff had signed them confirming that they had read them.
- The bridge was not informed of the bilge water discharge, as per standing orders, and did not put a lookout at the stern.
- During the last three months whilst the ship was inside the 12nm limit the vessel had pumped bilge water overboard a total of eight times.
- The vessel, after one more trans-Tasman voyage, will be dry-docked for a major overhaul and as the ship has enough storage space to hold waste water between ports the ship will not be detained on environmental grounds (MSA, 1999 6).

Despite the fact that the MV Rotoma's records showed that the bilge water and the PS tank were pumped out during their passage past the PKIMR and other evidence of culpability were advanced to the Captain, he still "denied the pollution allegations"(MSA, 1999 2). The possible reason for this is that both the Chief and Duty Engineer were adamant that the bilge water and tank contents were and could only be emptied to the sea via the oil-water separator. This was confirmed by the Maritime Safety Inspector who noted that all other avenues for waste water disposal were blocked off. Therefore, as the oil-water separator was apparently working at the time the most probable explanation is that the oil (HFO and light) had not floated to the top of the waste storage tanks. As a result, with the oil still suspended within the waste water column the oil-water separator could not do its job and the oil was discharged into the sea. Upon completion of the enquiry by the MSA and NRC, the owners of the MV Rotoma were advised of the results and accepted liability for the oil spill (MSA, 1999). Accordingly the court case became a sentencing hearing. This was held in the District Court at

Whangarei on the 28th June 2000 with Judge R. Gordon Whiting presiding (Box Fifteen).

**Box Fifteen** **Synopsis of Environment Court Hearing**

Between: Northland Regional Council (NRC) Informants
and Australia New Zealand Direct Line (ANZDL) First Defendant
and Anglo Eastern Ship Management Second Defendant

Charge: The defendants were jointly charged under s.338(1)(a) of the RMA (discharging petroleum from a ship in the coastal marine area).
The defendants were jointly charged under s.238 (s.227) of the MTA (neglected to notify the NRC or MSA of the discharge).

Penalty: The first charge carry's a maximum penalty of $200,000 fine, for a corporate body.
The second charge carry's a maximum penalty of $100,000 fine, for a corporate body.

The abridged comments by Judge Whiting, on the four issues, follow.

**Clean-up Costs:**

Mr Bell presented the cost of the clean-up, of the oil spill at the PKIMR, at $159,067.00. Judge Whiting ruled the costs as "actual and reasonable" and ordered the defendants to each pay half.

**Consideration of the Environment:**

The environmental concerns as they pertain to the fine were discussed next. It included an outline of the PKIMR as an unusual and unique area of land and marine environments that provides a habitat for many rare and indigenous species. In addition several types of dolphins, whales and seals inhabit the waters between the coast and the reserve and lastly that the Poor Knights Islands are of enormous spiritual and cultural importance to Ngatiwai. The defendants argued that although the area is environmentally unique and it is thrice protected under the RMA, the area has not been stipulated as 'special' under the MARPOL Convention. Within the MARPOL Convention rulings there are internationally specified areas of the marine environment where ships are forbidden to discharge bilges, no matter what type or through any method, and the PKIMR does not have that protection under the Convention. Judge Whiting accepted this reasoning and assured the defendants that he would "balance it against the importance of the Poor Knights from an ecological … and from a Maori and traditional point of view".

**Level of Responsibility and Prompt Guilty Pleas:**

The final two issues were the 'intentionality of the offences' and the 'prompt recognition of responsibility' by the defendants. The defendants clarified the cause to the Court which essentially was due to surfactants (binds oil to water molecules) contaminating the bilge water and the oil-water separator malfunctioned, unbeknownst to the crew. The Bridge was not notified of the discharge, as they should have been, and as a result no-one visually sighted the discharge, thus no-one realised so much oil was being expelled. Judge Whiting acknowledged that the act was not deliberate, but it was a case of negligence as the relevant crew acted carelessly and outside of the standing orders. Finally, the Judge recognized that the defendants "are responsible corporations … [with] no previous convictions of any kind [and therefore] they are entitled to the credit they have built up in the bank of good corporate citizenship". This recognition and the early guilty pleas, avoided a lengthy trial, and were taken into account prior to sentencing.

**Box Fifteen (cont.)**

**Sentence:**

Initially the Judge stated that collectively the offences necessitated a $90,000 fine, to be equally divided between the defendants. Due to the prompt guilty pleas, this penalty would be reduced by $30,000. The sentencing is that both ANZDL and Anglo Eastern Ship Management Ltd were fined as follows:

- Discharging a contaminant - $25,000 each; and
- Failing to notify relevant authorities of the pollution - $ 5,000 each; and
- The Clean-up Costs of $79,533.50 each; and
- Court costs ($130.00 each) and the prosecutions costs (when finalised)

(*Northland Regional Council v Australia New Zealand Direct Line Ltd and Anglo Eastern Ship Management* CRN 9088018862, 64, 66-7, 28/06/00**).**

It was reported by Gregory (2000 1) that "the fines match the New Zealand record under the Resource Management Act for offences relating to the illegal discharge of contaminants".

## 5.2.5 'No Go' Area for the PKIMR

While it's hard to envisage any positive outcomes from an oil spill, there has been one from the 1999 PKIMR spill. Firstly, because of this spill, other previously un-known oil spills at the islands were identified. Niblock (2004 1) thought that it was "possibly ships [empty their] … bilges at night and the oil had broken down by the morning … but you could still see the evidence on the rocks". These older spills were later confirmed by a marine biologist from Auckland University (Gregory, 2000b). Hence, all the oil spills highlighted the vulnerability of the reserve. This in conjunction with the various 'near misses' that have occurred over the years propelled the NRC, DOC and MSA to apply to the IMO for a ban on all large ships passing between the coast and the islands (Niblock, 2004). New Zealand, as a member of the IMO and a signatory to other international maritime agreements needed the IMO's authorization[12] for any obligatory restrictions. Further to the government agencies, Ngati Wai Iwi and other interested parties

[12]A 'mandatory requirement' for any maritime legislation to be applicable to all vessels it must be approved by an international maritime body, in this case the IMO. Therefore, if a country only recognizes a maritime requirement within their domestic statutes, it would apply to that country's flagships alone, even in their own waters (MSA, 2001).

like the Forest & Bird Society and local personalities also encouraged the ban. As Doak (2002 1) stated "[our] aim should be disaster prevention, with the most rigorous and stringent of safety measures" as "the prospect of black tides smothering our coastlines" with all that that entails is under "human control".

Subsequently, both the MSA and DOC raised with their Ministers, the proposed compulsory 'no-go' zone be put in place. The Ministers agreed and so the process began. The first stage was to review the 1994 VVRC. As Wetendorf (Ship Inspector – MSA, Whangarei) (2004 5) noted the voluntary closure was observed "98% of the time". He also pointed out that "two of the major oil companies who were chartering the tankers … [were themselves] instructing the Masters to stay east [of the islands] … (Wetendorf, 2004 5). Niblock (2004 1-2) also agreed with Wetendorf when he stated that;

> [J]ust because it is full of oil doesn't mean that a tanker poses the greatest risk for a spill or that other vessels might not have a lot of oil on board when they sail from here … [for example the] MV Rotoma wasn't an oil tanker, despite the fact that she made a lot of mess. It was recommended that … [tankers and bulk liquid carriers] went outside the Poor Knights, but if they were running late with the tide or whatever … [they could still come down] between the coast and the islands … we [checked] and found that most of them did [sail east of the islands] … still the odd one [didn't because they] either didn't see the notice, didn't understand what laden was … because for a lot of people at sea … English is their second language … or they just ignored the notice.

The 1994 review of the VVRC was to ascertain the following (MSA, 2001 2);

1. Whether to extend the Code to include other types of vessels; and
2. Whether all or parts of the Code should become mandatory

To answer these questions the MSA (2001 2) used "a risk based approach to determine those areas of the coastline that may need to be considered for a greater degree of protection …". Consequently, parts of the coastline were assessed for

the risk the area was in from pollution, caused by a vessel, and the sensitivity[13] of the environment to that pollution. Upon completion of the review the recommendations included "voluntary measures for domestic application and mandatory requirements to be submitted to the International Maritime Organisation" (MSA, 2001 2).

The MSA then recommended to the IMO that a 'mandatory area to be avoided' (MATBA) should be established along Northland's east coast (Niblock, 2004). New Zealand's application for this MATBA was duly heard by the IMO Sub-committee on Safety of Navigation in January 2003 (IMO, 2003). The submission identified the proposed MATBA to consist of that part of the North-eastern coast of the North Island from Bream Head to Cape Brett and extending east of the PKIMR. The justification for the MATBA were many and took account of the ecology of the coastline and coastal waters [between Bream Head and Cape Brett], the diversity of the PKIMR and the cultural, scientific and economic significance of the area. New Zealand further submitted that apart from three exemptions[14] the MATBA applies to all vessels larger than 45m in length. In connection with this request New Zealand provided a summary of the MATBA's impact on shipping. Effectively, the only disadvantages were the cost of the slight increase of mileage, being 10.1nm for vessels to/from Marsden Point and Whangarei and 2.5nm for ships heading north from Auckland and the Hauraki Gulf, and the extra time this took.

The Sub-committee was also informed that the MATBA had been "generally supported … and a number of international tanker operators specifically supported this measure" (IMO, 2003 9). After the submission had passed through several committee hearings, the IMO granted the application. Consequently in May 2004,

[13] [The criterion for] designating a "particularly sensitive sea area" (PSSA) [under the IMO]… include ecological criteria; such as unique or rare ecosystem, diversity of the ecosystem or vulnerability to degradation by natural events or human activities; social, cultural and economic criteria, such as significance of the area for recreation or tourism; and scientific and educational criteria, such as biological research or historical value (IMO, 2006a 1).

[14] The exemptions are the New Zealand Royal Navy (NZRN), commercial fishing vessels and barges towing stricken vessels. A possible justification for these exemptions maybe; as the NZRN defends New Zealand's waters they should have excess to the waters; New Zealand does not have a totally integrated coastal management system, as Fisheries are often exempted from other coastal management structures and as barges towing stricken vessels are a matter of safety for either or both the crew and vessel under tow and/or less hazardous for the environment. Finally, Marshall (2006, (per. com.)) stated that the RNZN and most commercial fishing vessels are fuelled by diesel, which is a non-persistent oil and usually evaporates before too much damage is done.

16 months after the MSA had submitted the application to the IMO and nearly four and half years after the PKIMR oil spill, New Zealand had its MATBA. Part of the media coverage, of the MATBA announcement, included an interview with Russell Kilvington the Director of Maritime Safety who acknowledged that;

> It means we have succeeded where no-one else has succeeded in the past. We've got a mandatory area to be avoided. We've managed to convince the world, with all its penchant for freedom of the seas ... that environment sometimes has to take precedence over economics (TV3, 2004).

The IMO (2006b, 1) confirm Mr Kilvington's statement, in that under MARPOL 73/78:

> Annex I - *Prevention of pollution by oil* … defines certain sea areas as **"special areas"** in which, for technical reasons relating to their oceanographical and ecological condition and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required (emphasis in original).

Although there are already other areas in the world that are classified as 'special areas', due to either their location (i.e. busy trading routes) or other factors their mandatory protection is in the form of 'Traffic Separation Schemes' or 'Mandatory Ship Reporting Systems' (IMO, 2006c). Therefore, New Zealand has achieved a world first with this MATBA and the restricted area is illustrated below (Figure Eight).

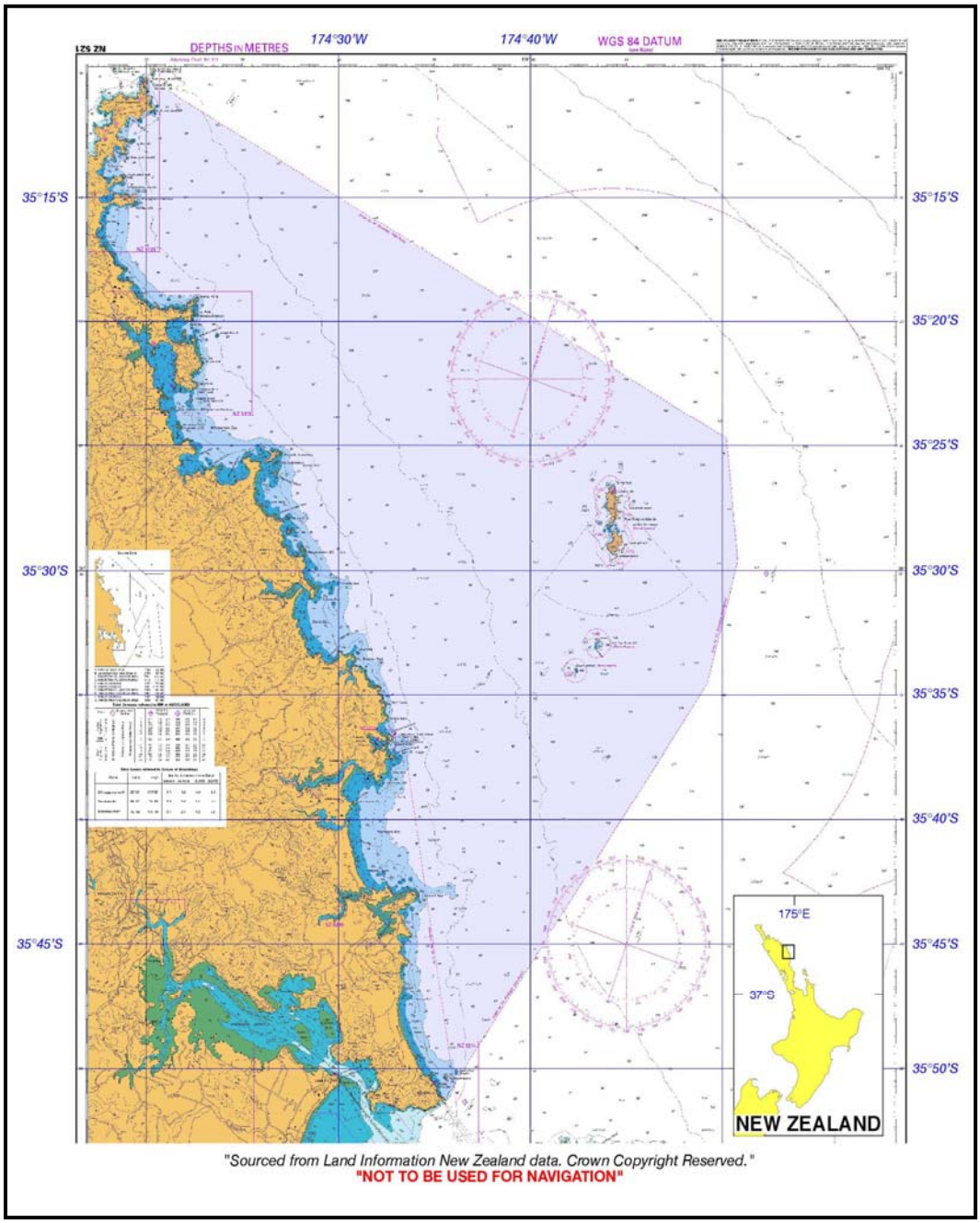


Figure Eight: Northland's Mandatory Area to be Avoided (Adapted by Oulton, 2006).

The MATBA however, did not come into effect until the 1st of December 2004. Niblock (2004 3) mentioned that the six-month 'grace period' is "to allow time for the charts ... to be corrected ... the sailing directions … to be changed and … the message to get out to the international maritime community". He also stated "that since the announcement [of the MATBA] the NRC had received a number of reports to their Environmental Hotline saying the ships are travelling inside the 'no-go area' and we have had to tell them that they are still allowed to do that … until the 1st December" (Niblock, 2004 2). With these calls to the Hotline and the nature of the responses from people I either interviewed or met socially while

I was completing my fieldwork it appears the community of Whangarei welcome the MATBA.

Other parts of the coastline were assessed regarding their risk to and from marine pollution by the MSA. This was in the belief that these coastal areas might also meet the IMO's criteria for PSSA, but they didn't either due to not having enough sea traffic or not being sufficiently ecologically diverse or vulnerable (MSA, 2004). Consequently for these coastal communities, though the probability of spill is not as high as Northland's east coast or the environment as unique, there is still a risk and for the township of Gisborne it became a reality as revealed in the next case study.

## 5.3 Desk-top Case Study - Jody F. Millennium

The PKIMR and Jody F Millennium (JFM) events have some similarities in that they both resulted in oil spills in the marine environment which caused some ecological damage, but the responsibility for and the cause of the spills are very different. Two variants, that are non-chronological, ought to be noted as they may have contributed to the outcome of the 'accident'. The foremost is the vessel. In the PKIMR case the MV Rotoma, registered in New Zealand, was over 20 years old and had equipment and structural wear and tear, which was the main reason why the crew needed to regularly empty the bilges (MSA, 1999). In contrast the JFM, registered in Panama, was practically brand new as it had been commissioned for launch in 2000 (MSA, 2003). The second is the nationality of the crew. The MV Rotoma's crew, from the Captain down, were New Zealanders fluent in English though this had no bearing on the actual spill (MSA, 1999). While of the 19 officers and crew aboard the JFM; two were Korean nationals, being the Master and Chief Engineer, while the rest were Filipino nationals. The JFM is a bulk carrier that routinely carried logs that could be carried above and below the deck (MSA, 2003). To simplify matters the review will be in chronological order (Box Sixteen), beginning with the JFM arriving in Wellington.

**Box Sixteen** **Chronology of Jody F Millennium Oil Spill**

**Day One:** 1st February 2002 - The JFM arrived at Wellington and loaded 4,690 tonnes of logs (less than a fifth of her DWT).

**Day Two:** 2nd February 2002 - The vessel departed Wellington at 1000 hours on route to Gisborne with an estimated time of arrival at Gisborne as 1000 hours the following day.

**Day Three:** 3rd of February 2002 - The vessel arrived offshore of Gisborne at 0900 hours but wasn't piloted into the harbour until 2150 hours that night. The reason given for this over 12 hour wait is that either they were waiting for a berth or the high tide (MSA, 2003; Marshall, 2006 (per. com.)).

**Day Four and Five:** 4th and 5th February 2002 - The JFM was loaded with logs during these two days.

**Day Six:** 6th February 2002 – Loading continued throughout the day, but by late afternoon the weather, in the harbour, had deteriorated to such a point that it was unsafe for the stevedores to continue. The JFM usually carries a total of 24,234 tonnes, but the vessel had approximately 22,000 tonnes of logs on board, of which a portion stowed on the deck was un-secured as the crew could not secure it under the weather conditions at the time. In the evening the weather conditions continued to deteriorate, and were considered at the time to be 'extraordinarily severe'. The sea surges caused both vertical and horizontal movement of the ship against the berth, to the extent that the five ship-to-shore lines broke. To lessen the vessels movement against the quayside, the two harbour tugs were employed to continually push the JFM alongside the dock. This worked for a short while and then one of the tugs was damaged and they were advised to move away. With the surges inside the harbour still increasing the JFM was advised, by the Port Authority, for safety reasons to leave and anchor offshore.

**Aside 1:** Prior to departure of any vessel, it's under keel clearance (UKC) must be measured against the latest harbour channel survey. The Harbour Pilot calculated the JFM's UKC as 1.5 metres, .5 of a metre under the Pilot's minimum of 2 metres. A minimum UKC of 10 per cent is recommended as safe practice ***only*** if speed is … kept under five knots … [and] … ***the wind will not greatly affect the steering at low speed*** MSA (2003, 12) .

**Aside 2:** The 'rules of command' on a vessel are that the Master has overall control of the ship, but that advice from the Pilot is generally accepted. This custom was upheld in this instance, especially as the Captain had informed the Pilot that he had no previous experience of Gisborne Harbour.

**Day Six cont.:** The vessel departed the quayside at 2138 hours. At the time of departure "the wind was southerly at about 20 knots and … there was a heavy southerly swell off the entrance to the harbour" (MSA, 2003 14). At 2150 hours the Pilot left the vessel with, as far as the Pilot is concerned, the corroboration of the Captain. The Captain denies this and states that "… he was not happy for the Pilot to disembark early but nevertheless accepted the 'con' (conduct of the vessel) without challenge" (MSA, 2003 16). The wind now at 30 knots and a 5 to 7 metre swell, the vessel was pitching violently. At 2152 hours the ship was hit by a wave that caused it to roll starboard and when it rolled back it touched the sea floor. With the **loss of UKC** the vessel struck the seafloor several times and this damaged her steering mechanisms. The result from this was that at 2158 hours the JFM had run aground outside of the entrance to Gisborne harbour. The initial action taken was to use the engines to move the vessel off the sea floor, this was ineffective. Then the Pilot, via radio, instructed the Captain to drop the anchors, to hopefully stabilize the vessel and ensure it didn't embed itself further. This action was also unsuccessful as the anchor cables broke and the anchors were lost. Both tugs were at hand, but due to the now seven to eight metre high waves, they couldn't get near the ship to render assistance and were eventually stood down. By 2300 hours the Director of Maritime Safety was notified of the grounding (Lee-Richards *et al*, 2002; MSA, 2003).

**Box Sixteen (cont.)**

**Day Seven:** 7th February 2002 – At 0400 hours, the MSA declared a Tier 3 oil spill response. This was in advance of any knowledge that an oil spill had occurred, as the legislation permits the declaration of an oil spill even if a 'probable release' situation exists (Lee-Richards *et al*, 2002). The JFM carried 700 tonnes of fuel, which consisted of 625 tonnes of HFO and 75 tonnes of diesel. The severe weather and sea conditions continued throughout the day and into the night. Though the JFM was still grounded, it appeared to be holding up and there was no evidence of any oil leakages. This allowed the MSA Oil Spill Response (OSR) Team over 36 hours to organize a spill response, should it occur (Lee-Richards *et al*, 2002; MSA, 2003).

**Day Eight:** 8th February 2002 - At 1220 hours the OSR Team received the call that the vessel was leaking HFO from the hull. The leak was seeping from the Number Three fuel tank due to three tears in the shell plating. Overall it was estimated that 25 to 30 tonnes of HFO was spilt. In a bid to prevent leakage from the vessel's other two bottom HFO tanks about 2/3rds of the oil, from these tanks, was pumped into the vessel's upper 'below deck' ballast tanks. Additionally 200 odd tonnes of HFO was also transferred to barges which then off loaded about half to HMNZS Endeavour. This left about 415 tonnes still on the vessel, though not in the bottom of the hull (MSA, 2003).

**Clean-up:** Due to the day and a half of 'grace' between the declaration of the Tier Three oil spill and the actual spill the effectiveness of the clean-up was greater and it also lessened the environmental damage. Booms had been assembled and were quickly deployed to protect what the OSR Team thought were the more environmentally sensitive areas like the Taruheru and Turanganui River mouths. For the larger areas, because of the amount of oil and incoming flood tide, little could be done to stop the oil impacting on the beach. In a bid to prevent leakage from the vessel's other two bottom HFO tanks about 2/3rds of the oil, from these tanks, was pumped into the vessel's upper 'below deck' ballast tanks. Additionally 200 odd tonnes of HFO was also transferred to barges which then off loaded about half to HMNZS Endeavour. This left about 415 tonnes still on the vessel, though not in the bottom of the hull (MSA, 2003). The process of clearing the oil also began that afternoon. Initially a trial-run was conducted of spraying a dispersant on the oil still afloat in the bay. This appeared to be effective on the Friday and so was continued throughout Saturday, but by Sunday morning it was apparent that the dispersant didn't work nearly as well as initially believed and it was discontinued. Other methods included a skimming operation that used vacuum trucks and later people shovelling the oil soaked sand into front-end loaders for removal. Though some areas did receive a moderate amount of damage, such as at the entrance to Turanganui River due to a boom failure at 3am Saturday morning, overall the OSR Team felt that minimal harm was done to the environment. This was mainly due to the number of people (120, both trained staff of MSA and Council, but mostly volunteers) involved in the operation and the 36 hours of preparation time. The clean-up was effectively concluded by Tuesday the 12th February, but as the JFM was still aground and another storm was forecast for Thursday the 14th February the OSR Team was not stood down. Though the storm did eventuate, and was as severe as the previous Wednesday, there was no further oil spillage from the vessel. Due to both the likelihood of further oil leaks having been greatly reduced and the monetary criteria, only ten OSR Team members remained on stand-by at Gisborne until the vessel was re-floated on Sunday the 24th of February (Lee-Richards *et al*, 2002).

The MSA Accident Report (2003) concluded that the direct cause of the accident was the 'severity of the storm' that not only ensured the vessel was not safe within the harbour, but also offshore. Though the vessel did not have the optimum recommended UKC for the channel, it was thought that it was a viable option as the vessel would be in less danger in open waters. Therefore, the attempt was

made to sail it out of the harbour. The MSA's report while accepting that the cause of the accident was basically the weather still severely censures the parties involved including the Pilot, the Port Authority and the Master of the ship. The reprimands related to the 'domino effect' of the decisions made (i.e. one wrong decision and the following decisions will also be wrong), the lack of information and staffing levels at the Port.

Price (2006, (per. com.)) suggests that there was plenty of disinformation and insufficient data leading up to the Pilot's decision to order the JFMillennium out of the harbour. For instance, the Pilot was informed that not only had all the moorings to the ship broken, but that there were no more moorings. This was untrue. Another reprimand, to the Port Authority, concerned the deficiency of the bathymetric survey, which if not regularly updated will alter the competency of the UKC calculation. These and the various other reprimands, along with the MSA's recommendations for the management of the port and harbour and/or channel modifications are explored further in the analysis chapter. Furthermore, a former Gisborne Port Harbour Master, Captain Ian Cook, rejects the findings of the MSA Accident Report. Captain Cook believes that "the decision to send the vessel out of port when it could not avoid hitting the sea bed, sent the Jody F Millennium to certain disaster, jeopardising the lives of 19 men … and causing $23 million worth of damage" (Lloyds, 2003 1). Though Captain Cook does not specify what he considers the cause of the incident others, such as the owners of the vessel, lay the blame squarely on the Port Authority and its owners the Gisborne District Council (Lloyds, 2003). These differences and the possible rationale for them will be discussed further in Chapter Six.

## 5.4 Chapter Summary

In summary New Zealand has been fortunate that, of the spills that have occurred here, none have been from a laden oil tanker. The two spills at the PKIMR and off the Gisborne coast were a "minor" spill (Tier Two) and a "very small medium" (Tier Three) oil spill, respectively, caused by commercial vessels. This obviously does not mean that there was no ecological harm done, but the damage appears, at present, to have had no long-term effects at either site. The spill at the PKIMR, eventually had a beneficial outcome for the marine reserve and

Northland's north-eastern CMA with the internationally recognised MATBA, for the larger ships, having been granted by the IMO. With most of the commercial vessels (excluding fishing trawlers) now having to sail east of the reserve it ensures the maximum amount of protection from oil spills, that at present, can be given to this unique marine area. The recommendations from the MSA Accident Report (2003) after the oil spill at Gisborne are not as easily substantiated. Firstly, a follow-up report conducted by the MSA about a year later is unavailable for this research and the owners of the Port of Gisborne, at the time of the spill, sold the business within a year of the accident.

The PKIMR oil spill was a case of negligence, though at the root of the problem was the deterioration of the vessel's hull and subsequent water leakage. In contrast, the JFM was two years old when it ran aground, hence it was structurally sound and consequently able to withstand the battering it received for a longer time than an older ship could possibly have done. This allowed a 'relatively' long time for the MSA to assemble equipment and personnel, from around the country, to lessen the harmful effects of the spill. Although this was a good thing there is conflict among the various parties involved with this incident as to whether had other decisions been made on the 6$^{th}$ of February the grounding and subsequent spill might not have happened. Accordingly, it could be said that both spills, while there were mitigating factors, primarily were due to human error. As such the analysis chapter will explore this inference and the extenuating aspects of the cases within the boundaries of New Zealand's maritime legislation.

# Chapter Six: Research Findings

The focus of this chapter is to analyse the major issues that have emerged from the research. The impacts of the theoretical perspectives outlined in Chapter Two are considered and the legislative influences and authority that govern the management of the coastal marine area are examined through the information collected from the case studies. Finally, this chapter speaks to the question of integrated coastal management.

## 6.1 Influence of MEAs

Chapter Four examined both the hard and soft-law MEAs, specific to oil spill prevention in the marine environment, which New Zealand has ratified or signed and the chronology shows that nationally New Zealand has been very responsive to its international obligations. This is demonstrated by the fact that New Zealand ratified OILPOL in 1971 and implemented the requirements of this MEA through the Marine Pollution Act in 1974. New Zealand then accepted the London Convention in 1975. This Convention incorporated the precautionary principle that 'all dumping at sea is to be terminated, unless the waste had proven to be harmless'. Again this Convention was initially acknowledged via amendment to the Marine Pollution Act 1974, under the jurisdiction of the Minister of Transport and administered by the MSA. With the enactment of the RMA however the authorization for dumping waste within the limits of the territorial sea, became a regional council responsibility. A further requirement to the London Convention was that member states also ratified SPREP which New Zealand did in 1990.

The last explicit 'marine pollution' MEA that New Zealand accepted, in part, was MARPOL 73/78 in 1998. Although it appears New Zealand did not commit to MARPOL 73/78 for two decades, it had adopted many of the obligations of the Protocol under the Maritime Transport Act 1994 and its predecessor the Marine Pollutions Act 1974. Therefore, it can be seen from the timeline that these and other international agreements such as UNCLOS I, II and III, have influenced New Zealand's legislation and in many respects, since the early seventies, we have been and are proactive in protecting the CMA from oil spills. The degree of

connection with global MEAs is highlighted by the reality that New Zealand had to apply to the IMO to have the 'mandatory area to be avoided' incorporated in international shipping regulations.

## 6.2 Analysis of Case Studies

Although the two case studies examined were quite different in nature and biophysical context, they have provided useful insights into New Zealand's response to oil spills within the coastal marine area.

### 6.2.1 PKIMR and the MATBA

New Zealand did not apply for the 'mandatory area to be avoided' (MATBA) between the coast and the Poor Knights Islands Marine Reserve only on the basis of the one oil spill at the reserve in December 1999. The case study confirmed that it was an accumulation of unrealized minor oil spills that had drawn attention to the risk that the PKIMR was in from the passage of ships between the coastline and the islands. This continual threat of oil spills to the marine reserve, led the movement to have an 'internationally recognized' ban of all ships through the channel. The reason to have all ships banned was that, due to the initiation of the Voluntary Vessel Routeing Code five years previously, less than two percent of the oil tankers and hazardous bulk liquid carriers still sailed through the channel. Thus, the oil spills were from other commercial vessels.

The IMO granted the application, though the oil spills were just part of their reasoning for doing so. The IMO also regarded the PKIMR as being a 'particularly sensitive sea area' (PSSA) (IMO, 2006c). As commented on in Chapter Five one of the crucial aspects that the IMO consider for PSSAs is the ecological uniqueness and vulnerability of the area. Therefore, it appears that the IMO deem the PKIMR as being 'critical natural capital' as explained under the Sustainability Imperative in Chapter Two. Consequently for the IMO to ensure the sustainability of the PKIMR economic issues, such as the inconvenience to the shipping industry to sail east of the islands, was reduced in importance. It was noted in Chapter Four that the marine reserve could be expected to be an area of 'significant conservation value' and thereby certain activities around the marine

reserve would become ‘restricted coastal activities’ through the authority of the Minister of Conservation. In Chapter Five however, it was discovered that if the Minister had imposed an RCA on the area surrounding the PKIMR, then it would have only applied to New Zealand ships. For any maritime legislation to be applicable to all vessels it must be approved by an international body, such as the IMO (MSA, 2001).

### 6.2.2 PKIMR and the Jody F Millennium Contrast

Clearly the PKIMR is an outstanding marine environment, but during the development of the MATBA submission to the IMO, the MSA also investigated other coastal areas for possible classification by the IMO as ‘areas to be avoided’. Under this survey, although there were many coastal areas that had certain aspects that New Zealand classes as ‘significant’ or ‘special’, none met all the criteria set by the IMO. Thus, the Gisborne coastline and harbour did not meet the international standard of PSSA and as such is not considered ‘critical natural capital’. There are several reasons for this. Firstly, although the deltas of the Taruheru and Turanganui Rivers were judged as vulnerable areas by the MSA when cleaning-up the JFM oil spill, the CMA in general is not an area of ecological rarity. Secondly, whereas Northland’s eastern coastal waters has considerable vessel traffic, thereby increasing the PKIMR’s susceptibility to an oil spill, the CMA off Gisborne is far less exposed to the same threat or actuality. Another PSSA standard is one of socio-economic attributes. For Northland the PKIMR generates an economy for the region through the tourism and diving operations to the reserve and the Islands are of great cultural significance to the Ngati Wai people. In contrast, although the knowledge here is partial, the Gisborne CMA does not give the impression of being a ‘must do’ tourist destination. Further to this while the desk-top review was not as detailed as the major case study, in no report of the JFM oil spill or clean-up was any river or beach singled out as having considerable cultural value. However, despite the fact that the Gisborne CMA is not a candidate for PSSA or an area of ‘significant conservation value’ the JFM oil spill still damaged the flora and fauna of the beaches and coastal waters.

### 6.2.3 The JFM Grounding

Under the JFM review in Chapter Five, Captain Ian Cook, a former Harbour Master at the Port of Gisborne, rejected the MSA's findings of the JFM grounding in 2003. The MSA put the main cause of the grounding down to the extreme weather conditions at the time. Captain Cook stated that it was the decision to have the JFM leave the port that ensured the 'accident'. From subsequent information gathered it emerged that both the MSA and Captain Cook were accurate in their statements. Price (2006, (pers. com.)) supports the MSA's Accident Report that it was mainly the excessive weather conditions that was the driving influence for the decision to have the JFM leave the port. However the assessment of the situation, throughout the day, as well as other grounds compounded the judgment that the vessel would be safer at sea. These reasons range from;

- No Harbour Master on duty; and
- Lack of up-to-date weather data available to the Pilot, due to the Gisborne District Council (part owner of the port and the receptor of the weather forecasts) being closed for Waitangi Day; and
- Misinformation provided to the Pilot regarding the lack of mooring ropes (this was incorrect) after five had broken from the JFM; and
- The tugs at Gisborne Port were not 'big' enough to keep the JFM at the berth; and
- The timing of the Pilot disembarking from the JFM, which ensured the vessel was travelling slower than it should have been in sea swells of around eight metres (Price, 2006 (pers. com.)).

Additionally, Price (2006, (pers. com.)) stated that "there were suspicions held at the time … [by Port of Gisborne staff] that the depth in the entrance to the harbour was erroneous - that there was less water than chartred". As the vessel became grounded on leaving the entrance to the harbour the lack of UKC could be attributed to 'less water' in the channel. This implies that there was no recent bathymetric[15] survey existing for the Pilot to make reliable calculations of the

[15] "Bathymetry is the measurement of the depths of water bodies from the water surface … [and is] the marine equivalent to topography" (U.S. Environmental Protection Agency, 2006).

UKC necessary for the JFM to have a clear passage out. Thus, the final consensus of why the JFM went aground are the gale force winds and heavy swell at the time, compounded by human error and inexperience. It is interesting to note however, that apart from the actual weather conditions all the other reasons highlight a lack of resources for essential services that a port should offer. This is why when the owners of the JFM (Twin Bright Shipping Co. and Soki Kisen Co.) received the $23 million bill for damages, of which $2.9 million was paid to the MSA for the clean-up operation, they sued the co-owners of the Port of Gisborne (Gisborne District Council and Tauwhareparae Farms Ltd formerly Port of Gisborne). The owners of the JFM were unsuccessful in their civil claim.

## 6.3 Response to Objective One and Two

### 6.3.1 Civil Liability for Oil Spill Pollution from Ships

As both the oil spills reviewed in this thesis were from commercial vessels and not oil tankers their owners had to pay the full costs of the environmental damage caused by the oil spills. In contrast, to cover the costs of oil spills in the marine environment the oil industry pay into two MEAs the CLC 1969 and Fund Convention 1971 that have been in force for over 35 years. A year prior to the CLC however, a number of tanker owners had already initiated two voluntary funds (TOVALOP and CRISTAL) for the specific purpose of covering their liability in the case of an oil spill. Even though the CLC and Fund Convention were instigated by the UN only a year or two after the voluntary schemes, to hold the oil industry accountable for oil spills, the voluntary funds continued as supplementary funding and they did not cease until 1997, 29 years later. This suggests that some oil tanker owners had acknowledged their responsibility not only towards the environment, but also to the affected communities who often lost their livelihoods because of the oil pollution. For other members of the oil industry, it took close to thirty years to either accept, or be forced to accept, the conditions of and contribute to the CLC and Fund Convention. New Zealand is a member to both the CLC and Fund Convention, but as the MEAs are there to compensate a country once an oil spill has occurred New Zealand initiated the Oil Pollution Levy (OPL). This levy “is collected from the risk creating sectors of

the maritime industry … to maintain the Oil Pollution Fund (OPF)" (MSA, 2006 21). The 'risk creating sectors' are the shipping and fishing industries and oil exploration and production industries. The rate of payment is proportional to the threat that they generate to the environment. The OPF supports the MSA in training personnel, maintaining and/or upgrading equipment to respond to oil spills and in paying the costs of damage when the spiller is unable to be identified (MSA, 2006b).

This demonstrates that New Zealand has also internalized part of the economic cost of marine pollution, as advocated by Principle 16 of the Rio Declaration 1992, and has passed it on to maritime industries. The Principle suggests that the 'polluter should bear the cost of the pollution'. New Zealand however has taken a precautionary approach, advanced again through Agenda 21, and legislated (via the MTA) that most commercial maritime users pay in advance to maintain New Zealand's marine oil spill preparedness and response capability.

### 6.3.2 IMO Mandates

The CLC and Fund Convention established the 'internalization' of the costs of marine oil pollution and thus the UN has been promoting this for many years through both hard and soft-law MEAs. Under MARPOL 73/78, a Protocol that seeks prevention of marine pollution, it was identified that the oil tanker industry should also accept responsibility for the prevention of oil spills. As a result, various amendments to MARPOL 73/78 have entered into force to either ban, regulate or enforce certain operational practices. Possibly the most notable amendment was the regulation, enforced from 1993, that made it mandatory for new tankers of 5,000 DWT or more to be fitted with double hulls. Supplementary to this amendment, the IMO in 2003 accelerated the 'phasing-out' of single hull tankers from 2007 to 2005 (IMO, 2004 3). Therefore, all single hulled tankers should now be obsolete. Mr Wetendorf, the Whangarei MSA ship inspector interviewed, stated that "reactions about the single-double hull tankers from the shipping industry were generally that it was a 'good' regulation". Further to this he reported that

> Several contacts within the shipping industry commented that the Europeans had become very strict on single hull tankers and that if … New Zealand didn't take the same approach all the single hull tankers would come down here. I do a lot of tanker inspections at Marsden Point and interestingly the reverse has happened … we have seen nearly all brand-new double hulled tankers in New Zealand, so all the tankers we are inspecting are low risk because they are either on their maiden voyage or their second or third trip (Wetendorf, 2004 6).

Other amendments include the 1983 banning through MARPOL 73/78 of the carriage of oil in the vessel's forepeak tank (as in the event of a collision this is the most vulnerable point of the ship) and the standardization of operational discharges of oil from ships under Annex I of MARPOL. Since 1995 the IMO has 'enhanced' the inspection programme for tankers and bulk carriers aged five years or over (IMO, 2004 2-3). The enhanced inspection programme was apparently functioning here as Wetendorf (2004 3) pointed out that "there has always been a very stringent system in place in New Zealand to inspect foreign flagged ships … [and] inspections are based on the legislation of SOLAS (safety of life at sea) and MARPOL 73/78 and the MTA".

From the above MEAs it could appear that there is a reluctance on the part of the oil industry to be accountable for marine oil pollution however the oil tanker owners voluntary agreements (TOVALOP and CRISTAL) and the more recent experience of New Zealand berthing mainly double hulled tankers, without government direction, demonstrates that changes in the operational practices of the oil transport industry are occurring. Additionally the nearly universal acquiescence of the oil tankers and bulk liquid carriers, which trade in New Zealand waters, to voluntarily sail east of the PKIMR displays a possible shift in philosophy. Probably explanations could include:

- as noted above, other countries are strengthening their environmental laws to better protect their coastal waters and therefore oil transporters have to accept the new regulations if they want to trade in that country; or

- oil companies realize the power of consumers and understand that oil companies who cause ecological devastation through a spill, especially if it could have been avoided, may find themselves boycotted: or
- the oil companies have learnt from previous major oil spills and are taking a more preventative approach to the transport of oil or all of the above.

The same can not be said of a number of other commercial shipping companies. For instance the MV Rotoma a very old ship with an acknowledged problem (leaking stern gland) which needed to continually empty its bilges, did not maintain the oil-water separator or ensure that they only drained the bilges outside the territorial limit. This example along with the evidence of previous oil spills at the PKIMR and other shipping 'accidents' that were due to equipment failure illustrate that maintenance on these older ships probably needs to be of better quality. The attitude towards maintenance on vessels is as Wetendorf (2004 4) believes

> always a crewing issue … [there] are different philosophies, some shipping companies run with the minimum of crew… who concentrate on the cargo and do no maintenance … then after two years [they] put the vessel in dry dock [to fix all the problems] … while other companies employ more crew and maintain the vessel at sea.

The foremost operational norm was endorsed by the owners of the MV Rotoma, as after two more trans-Tasman voyages the vessel was going into dry-dock for repairs. In the final analysis though, this business practice cost the owners and managers of the ship over $219,000 jointly, caused environmental damage to the PKIMR and economic loss to some businesses in Whangarei.

## 6.4 Integrated Coastal Management

The oil spill clean-up at the PKIMR and the identification of the MV Rotoma as the oil spiller was mainly due to the cooperation between the MSA and the NRC and this collaboration is an element of what is termed Integrated Coastal Management (ICM). In New Zealand the ICM is facilitated by the RMA. The Act instigates a hierarchal system of government and provides structures that

amalgamate national, regional and local level decisions regarding the use of resources.

Figure Five in Chapter Four illustrates the jurisdiction of several Ministries and regional councils and the Acts that they administer in New Zealand's sovereign waters. There are however two specific statutory interconnections between regional councils and the MSA in the territorial sea with regard to oil spill response and enforcement. Firstly, for the enforcement of 'marine protection provisions' the legislative framework is divided between the RMA and the MTA. Under these two Acts the marine protection provisions are extended by the Resource Management (Marine Protection) Regulations 1998 of the RMA (within the 12nm limit) and the marine protection rules in the MTA (EEZ). Through these provisions the authority for actions such as clean-up, collection of evidence, prosecution and cost recovery are either held solely or jointly by the MSA and regional council. The other legislative connection is set out in Part XXIII of the MTA, whereby the requirements of regional councils include "prepare and maintain regional oil spill contingency plans … appoint regional on-scene commanders … [and] respond to marine oil spills of regional significance …" (MSA, 2006c 3-7). The interconnection between regional councils and the MSA can be more than just a statutory obligation, an integrated unit can be formed. This integration was apparent in Northland with Mr Niblock, who in 2004 was employed by the NRC as the Harbour Master and manager of the Oil Spill Response Team and was also the National On-Scene Commander for major oil spills at the time.

Though many of the statutes, plans and policies that focus on the marine environment are integrated, Rennie (1993) highlighted the lack of integration of fisheries into coastal management. The presence of two separate statutory processes (the RMA and the MTA provisions) for oil spill management could be seen as indicating a lack of integration. However, as the research has shown, the role of the regional council effectively integrates the respective responsibilities of the different Acts.

## 6.5 Chapter Summary

The focal point of this chapter was to analyse the case studies in light of the earlier chapters on legislation. Initially the influence of the international agreements of OILPOL and the London Convention, which New Zealand ratified in the early seventies, formed the basis for New Zealand's proactive legislation, such as the Marine Pollution Act 1974, that prevents oil spills in our territorial waters. These MEAs were followed by the regional Protocol of SPREP, UNCLOS III and MARPOL 73/78 that even though New Zealand did not ratify until the late nineties, certain annexes and regulations had been incorporated into the Maritime Transport Act 1994 and the 1994 amendments to the RMA thereby further strengthening New Zealand's ability to protect the marine environment from oil spills.

The PKIMR oil spill highlighted the area's vulnerability to spills and set in motion the application to and appointment by the IMO of the first MATBA in the world. This international recognition to ban all shipping from the area is the most protection that can be achieved and even though it is only a small part of New Zealand's coastline, the shipping traffic is the busiest in New Zealand.

Though the grounding of and subsequent oil spill from the JFM was mainly due to the gale force weather, the review drew attention to the lack of services and resources at the Port of Gisborne. These include vital communication systems breaking down, disinformation, out-of-date bathymetric survey and inexperience. Although attempts were made to discover whether the recommendations put forth by the MSA in their Accident Report in 2003 were fulfilled, no knowledge of any subsequent action was garnered (Lane, 2006 (pers. com.)). It is probable, given the selected small community of specialists and the incident's high profile, that the lessons learnt from it have been applied to not only the Port of Gisborne but other ports around the country.

The CLC and Fund Convention MEAs are basically an 'insurance' against future oil pollution damage that member governments do not have to pay. The MEAs are funded by contributions from the oil industry and as such are an 'internalization' of the costs of marine oil pollution to the oil industry. The

private tanker owner's voluntary funds (TOVALOP and CRISTAL) established before the CLC and Fund Convention continued to supplement the UN MEAs for the next three decades. New Zealand, after signing the Rio Declaration and Agenda 21 in 1992 at the Earth Summit, implemented Principle 16 of the Declaration and the precautionary approach from Agenda 21 and through the MTA instigated the Oil Pollution Levy. This levy, on most commercial maritime users, funds the Oil Pollution Fund which sustains the MSA's preparedness and response capacity to marine oil spills. Although this oil pollution levy and fund do not prevent oil spills, by maintaining the MSA's response capability the damage caused by the spill may well be minimised through response and restoration activities. MARPOL 73/78 also uses 'internalization' of the costs of oil pollution, but the focus is on prevention. The Protocol enforced several changes to the oil transport industry's operational practices, construction design of the tankers and enhanced port state controls through improvements to the ship inspection system. As a party to MARPOL 73/78 any precautionary developments or amendments made to the Protocol lessens New Zealand's risk to an oil spill.

The assimilation of these various precautionary and preventive MEAs into New Zealand's statutes has translated into the harmonizing of the 'marine protection provisions' between the RMA and MTA. This uniting through legislation of two separate government agencies, to avert and combat oil pollution in the coastal marine area demonstrates that integrated coastal management is not only possible, but necessary for a fluid environment such as the oceans.

Having presented an evaluation and critique of the international agreements and national legislation that relate to oil pollution and then analysing two 'oil spill' incidents the next chapter encapsulates the main conclusions from my research.

# Chapter Seven: Conclusions

The purpose of this thesis is to answer the research question of 'How does New Zealand's legislation prevent oil spills in its territorial waters?' The first objective was to explore whether the cause of New Zealand's marine oil spills are because of oil tanker/shipping companies' business operations and/or ideology. The second objective was to establish what governmental measures are in place to lessen the impact of an oil spill in New Zealand. These two objectives were examined through the review and analysis of the international and national legislation and two case studies.

## 7.1 Thesis Findings

The main findings are presented here in relation to the two objectives set out above. This leads to the findings regarding the original question.

### 7.1.1 Objective One

In response to the enquiry of whether the oil spills in the CMA are the result of the business practices or ideology of the tanker/shipping industry the impression from the two case studies and the knowledge gathered from the key informants is that there are mixed responses within the industry. The oil industry, in New Zealand at least, appears to have taken all the necessary precautions to minimise the risk of an oil spill in the marine environment. This conclusion has been drawn from the fact that they voluntarily went east of the PKIMR ten years prior to the MATBA being enforced and additionally they supported New Zealand's application to the IMO for the MATBA. Then when some European countries banned single hull tankers, the industry did not employ them to transport oil to our shores, which they could have done, but used mainly brand-new double hull tankers. This demonstrates a change in both ideology and operational procedures. However, whether this philosophical shift in environmental and socio-economic values comes from within the oil industry or is the result of pressure from the IMO and other international environmental organisations can not be determined by this research. Nevertheless, there are a number of members of the oil industry

that support social responsibility, evidenced by the supplementation of the CLC and Fund Convention schemes for close to three decades.

The business practices and ideology of some other shipping companies however exhibit a far less stringent attitude to both the maintenance and/or management of their vessels or the parameters of New Zealand's marine protection rules. This was revealed by the equipment failure and non-compliance of ship standing orders on the MV Rotoma and the emptying of the bilges while still sailing in New Zealand's territorial sea.

### 7.1.2 Objective Two

The purpose of ascertaining what governmental measures are in place to reduce the impacts of an oil spill in New Zealand was because accidents do happen and laws are broken. Even though there may possibly have been a different outcome to the JFM incident, if a variety of other factors had not been 'in play' on that day, the grounding and resultant oil spill were accidental. This is in sharp contrast to the MV Rotoma spill which was due to the vessel breaking the law as vessels should not empty their bilges inside territorial waters.

Apart from the legislation, the main governmental measure to minimizing the ecological destruction from a spill is the Oil Pollution Fund managed by the MSA. This fund ensures the preparation and response capability of the MSA and regional councils to an oil spill incident. The preparedness and competence of the MSA and Regional Councils (Northland and Gisborne) in the two oil spills ensured that both spills did minimal environmental damage and in the case of the PKIMR identified and successfully prosecuted the offender.

### 7.1.3 Answer to the Research Question

The answer to how New Zealand's legislation prevents oil spills in our territorial waters needs to be considered in terms of different scales and spheres of action. At the international scale the government's response is initially to and through its involvement with the United Nations. This membership to an international body with the 'obligation' to ratify hard-law and sign soft-law MEAs provides New

Zealand with both benefits and responsibilities. Even though the word responsibility suggests an economic imposition, in this case it represents the protection of New Zealand's oceanic domain from oil pollution. By implementing the international rules and regulations set down in the MEAs through national legislation, New Zealand can apply most provisions of the MEAs to all vessels.

Clearly, the MATBA was one area where it was necessary to have IMO authorization as it involved the 'free right of passage to the seas' allowed to all vessels even inside a country's EEZ. Mostly though, the implementation of the regulations of MEAs such as OILPOL, UNCLOS III and MARPOL 73/78 allows New Zealand the right to enforce, through the RMA and MTA, standards that safeguard New Zealand's maritime environment from oil spills. Other legislative instruments include the NZCPS and RCPs however the main mechanism in preventing oil spills in our territorial sea is the meshing of regional councils with the MSA through the execution of the 'maritime protection provisions'. These 'provisions' ensure that in the case of oil spill prevention New Zealand does integrate coastal management.

## 7.2 Sustainable Development v Sustainable Imperative

At the heart of Sustainable Development is the integration of economic, social and environmental concerns not only for the present generation, but also future generations. However, as commented on in Chapter Two there are many variations to Sustainable Development. Two economic models examined were Weak and Strong Sustainability. The main difference between the two is that Weak Sustainability believes all resources (human, natural, built) are substitutable while Strong Sustainability declares that there are some natural resources that are non-substitutable (air, water, soil). So even though Strong Sustainability is an economic model it can be more easily related to the Sustainability Imperative in that there is long-term uncertainty about some of the effects of humans on the environment and that possibly they cannot be reversed. Where Sustainable Development places as much importance on the social and economic aspects of societies as it does environmental concerns, the Sustainable Imperative recognizes that humans are totally dependent on 'nature'. Therefore, we need to be more

cautious in our approach when undertaking activities that may harm the environment, especially if the harm is unknown, but also if the harm is known. New Zealand has acknowledged this precautionary approach, especially to oil spills in the marine environment for many years and it is a fundamental principle of the RMA and the basis of sustainable management with an 'environmental effects-based' planning structure. This preventative attitude is also established through other statutes such as the MTA and implies a deep government commitment to protecting our oceanic domain.

## 7.3 Research Limitations Revisited

As with all research, there are limitations such as scope, size and time constraints. There are however specific limitations exclusive to this research. The primary constraint was the inability to generalise the findings of the two case studies with other places, conversely though this is very good as it indicates there have been few significant oil spills in New Zealand's territorial waters. There have been several other small spills, such as the diesel leak in Fiordland in February 2004 and some 'near misses' such as the Capella Voyager a crude oil tanker carrying over 107,000 tonnes that grounded in Whangarei Harbour in 2003, though no oil was lost. New Zealand has only had one spill, the Jody F Millennium, which warranted mention in the international 'oil spill' statistics. Less significant limitations were imposed with the data collection; key government agencies were unable to clarify apparently inconsistent and contradictory information, despite seeking confirmation from an international body, and relevant documentation had gone 'missing' and finally other data was unavailable due to still being in the finalisation stages. The last restriction was the non-acquiescence of a key stakeholder to be interviewed, the owners and managers of the MV Rotoma, thereby not being able to gain a full understanding of their position. Despite these constraints the methodology employed has enabled a rich appreciation of the issues, scale and contrasts between different types of oil spill response.

## 7.4 Guidelines for Future Research

This research has shown that New Zealand has and does take a very proactive stance in protecting its marine environment from both the threat and reality of oil spills from vessels. However, as with any research during the gathering of information and the exploration of the issues other avenues of interest can be created. In the case of oil pollution in New Zealand's territorial sea, future research that may further contribute to the safeguarding of our coastal marine area could include:

- The multiple unknown oil spills at the PKIMR prior to the MATBA, suggests the need for improved monitoring elsewhere. An investigation on what monitoring is done could offer further insight.

- The International Maritime Organisation found that the Poor Knights Islands Marine Reserve was an area of "critical natural capital" and though no other marine area in New Zealand met all their criteria a review of what New Zealander's think is "critical natural capital" or areas of "significant conservation value" in our own marine environment could possibly highlight areas that need more 'protection' than they receive now.

- The main source of global oil pollution in the oceans is from land-based activities that drain into the sea. Research into the quantity of indirect oil pollution that enters the coastal marine area and the government's response to the problem would further enhance New Zealand's proactive stance in combating oil pollution in the marine environment.

- As sustainability appears to be a key goal of many nations and as our approach to prevent oil spills from vessels generally seems to work, there is the potential to explore or consider extending the New Zealand model to other nations within the socio-economic and political arena.

## 7.5 Final Comment

Integrated coastal management has become progressively more important as maritime nations realize the growing pressures on the coastal area from economic, environment and social interests. The findings of this research have confirmed that the management of both the prevention and rehabilitation of our territorial waters from ship oil spills is a combined effort between government agencies, that is effective, it is now time to look at the other sources of destruction and decay of our marine environment and jointly work together to ensure that our oceanic domain is preserved.

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